Annual Report 2003

Amhara Micro-enterprise development, Agricultural Research, Extension, and Watershed management (AMAREW) Project

Tebikew Bale Building
Near the Commercial Bank of Ethiopia
(Bahir Dar main branch)
P.O. Box 61
Bahir Dar, Ethiopia
Telephone: 251-(0)8-201430/201470
FAX: 251-(0)8-202555
E-mail: amarew@telecom.net.et

Report Prepared by
AMAREW Project Staff and the ANRS Partners

Supported by USAID/Ethiopia under Contract
No. 663-C-00-02-00340-00 between the Mission and Virginia Tech

Executive Summary: AMAREW Project Annual Report 2003

The Project Document of the Amhara Micro-enterprise development, Agricultural Research, Extension, and Watershed management (AMAREW), under the Rural Household Production and Productivity increased Strategic Objective (RHPP SO), USAID Contract No. 663-C-00-02-00340-00, signed by the Agency and Virginia Tech, states that its primary objective is to establish community-based paradigm shift within the Amhara National Regional State (ANRS) for the development of strong, long-term partnerships among collaborating universities, research and service institutions, ANRS bureaus, extension services, NGOs, and private sector entities in both the US and Ethiopia. Therefore, AMAREW works to strengthen agricultural research and extension, watershed management capacity, and micro-enterprise development in the ANRS by working with its ANRS partners in targeted and selected pilot food-insecure woredas. The Project is generally aimed at assisting the ANRS to design activities, which will result in increased rural household income, thereby increasing food security.

The Virginia Tech led Consortium (Virginia Tech, Cornell University, Virginia State University, and ACDI/VOCA) and the Primary Partners of the Consortium in the ANRS, namely Food Security Program Coordination Office (FSPCO), Amhara Regional Agricultural Research Institute (ARARI), Bureau of Agriculture (BoA), Amhara Credit and Saving Institution (ACSI), and the Regional Micro and Small Enterprises Development Agency (ReMSEDA, now MSEIDB, Micro and Small Industries Development Bureau) collaborate in implementing this project. ARARI is responsible for the planning and implementation of research while BoA plans and implements agricultural extension and watershed development activities in the selected pilot extension woredas and watersheds , respectively. Similar arrangements govern AMAREW's relationships with other ANRS partners. The technical advisors of AMAREW advise and assist their respective line department experts in planning and follow up of activities. AMAREW Project started full operations in January and February of 2003 when its full complement of staff and facilities was in place.

Selected Examples of Project-wide Accomplishments and Progress

The ARARI Research Centers have developed and tested a number of agricultural and natural resources technologies that can be taken up by the extension or other stakeholders for dissemination to the farming households in the target woredas. Farmers and extension agents of BoA have evaluated these technologies jointly in Farmer Field Days and in the Research-Extension-Farmer Advisory Council (REFAC) field evaluation tours and found them to be promising. Examples of technologies that have been identified from 2003 on-farm activities for dissemination/seed multiplication across the target woredas are given below.

- Bread wheat varieties: HAR 1685, HAR 1775, HAR 1868, and HAR 1899 are recommended with their production package for various sites in Molale, Lay Gayint, and Simada woredas. They were generally early maturing and gave grain yield of about 30 q/ha.
- Barley varieties: HB 52, HB 1533, Kulumsa 1/88 (Misrach), Holker, Abay, Kulumsa, and Shegie with an average yield of 25-34 q/ha for mid to highland areas of Lay Gayint, Simada, and Asagirt woredas were found promising.
- Sorghum varieties: High yielding (about 30q/ha) of Striga resistant sorghum varieties such as Abshir, Gobye, Birhan were widely distributed to farmers in the lowlands of

Wollo. Other high yielding sorghums distributed in the project area are Meko, Yeju, and Teshale.

- Groundnut: Shulamis variety which yields up to 40 q/ha is recommended for the Kobo area.
- Potato varieties: Gera, Gorebella, Tolcha, Menagesha, and Zengana have been found to perform well in such places as Molale, Mehal Meda, and Delanta. The average yield ranges from 300-355 q/ha.
- In an adaptation trial conducted in Delanta, tree species such as *Eucalyptus globules, Hagenia abyssinica, Acacia saligna, Acacia melanoxylon, Cupressus lusitanian*, and *Salix suberrata* showed good performance and survival rate. Hence they are recommended for the high lands of Wollo.
- Different water harvesting techniques (Eye brow, half moon, and collection trench) for improving the survival rate of tree seedlings have been tested in the various sites.
- Mechanization/Farm implements: Single yoke harness drawn by ox, single harnessing system drawn by camel, treadle and chain & washer water pump were successfully tried at selected sites.
- Molding frames necessary to train farmers in producing fuel saving stoves have been made available to three of the pilot woredas, and 146 women and 25 Development Agents (DAs) in the five pilot woredas were trained in the construction and use of these fuel wood-saving stoves.
- Sets of materials that would assist in the processing and handling of honey have been made available to two woredas for training farmers in modern beekeeping. As a result, training in the construction and use of improved beehives (using locally available materials) and in handling bee products has so far been given to 99 farmers and 30 DAs.
- A Regional level Integrated Watershed Development and Management Team (IWDMT) has been established, and based on the experiences from the pilot watershed areas, it is working towards developing an approach that will assist BoA in the management of watersheds in the Region.
- Community Watershed Management Organizations (CWMOs) established in the two watersheds (Yeku and Lenche Dima) have already begun playing lead roles in determining the course of research and extension in the watershed areas.
- Area closures in the two watersheds have become social closures with no armed guards or fences, only by an agreement reached among the community members to exclude animals and to avoid cutting. The results are encouraging, in some cases impressive
- Under the umbrella of the CWMOs four watershed development committees have been established: namely, Natural resources management, Agricultural improvement, Social development, and Business development. Each CWMO is composed of 32-farmer representatives with a 1:1 male to female ratio.
- Initial training was given in June to core community group members on Community Organization Leadership Towards Action (COLTA). This course was held in Mersa and conducted by the Lutheran World Federation. A total of 19 people were trained, including five DAs, three PA leaders, and at least five farmers from each of the two pilot catchments. This training focused on the causes of poverty, participatory techniques, and community self-reliance and organization as a way to solve problems.
- The project has renovated an office at Woldiya within the woreda Rural Development Bureau compound and started using it. Some furniture has already been transported from the Bahir Dar AMAREW Project office to the new office and a telephone line has been connected as well.
- The MED component has been focusing on developing and strengthening specific Business Development Services (BDS) in the ANRS through our partners.

- The first sub-sector study was initiated with the assistance of a group of business students at Bahir Dar University (BDU). A summer internship program for fourteen BDU business students was completed. The internship consisted of the performance of several steps in a Sub-sector/Business Service Market Development approach.

Seed multiplication of improved varieties

Shortage of planting material of improved varieties in adequate quantity is one of the major problems faced by farmers in the target woredas. Released varieties without the provision of adequate planting material do not bring about food security to farmers. In response to the dire need of farmers in the target woredas, the ARARI research centers have been occupied in seed multiplication of improved varieties of field and horticultural crops on farmers' plots through participatory seed multiplication. Based on the partnership of AMAREW Project with CRSP universities, 30 quintals of certified seed of three Striga resistant sorghum varieties (Abshir, Birhan and Gobiye) were received free of charge from Professor Gebisa Ejeta of INTSORMIL/Purdue University and distributed to hundreds of farmers through the Sekota and Sirinka research centers.

Long-term degree training

Degree training of selected ANRS professionals is considered as one of the principal means for building human and institutional capacity and facilitating the research/extension paradigm shift. In line with this, the project, together with the partner institutions, identified key areas that need to be strengthened through upgrading the academic qualifications of their staff. Consequently, three researchers from ARARI and two woreda level extension workers who passed the University entrance examinations were sent to Alemaya University to study for the M.S. degree. Agreement was made with the University for the students to do their M.S. research on problems and issues focusing on the AMAREW Project areas.

Furthermore, a different tailor-made arrangement was made with Alemaya and Mekelle universities to up-grade the academic qualifications of woreda level extension workers. Through this program, in 2003, a total of ten staff members of BoA having diploma qualification were sent to Mekelle and Alemaya to attend summer B.S. degree programs. In addition three staff members of ARARI were made to join the regular program to attend B.S. degree classes.

Annual Report 2003

Amhara Micro-enterprise development, Agricultural Research, Extension, and Watershed management (AMAREW) Project

1. Background and Project Management

Chronic and acute food insecurity is widespread and severe in much of the Amhara National Regional State (ANRS). Currently, more than 50% of the 105 woredas of ANRS are drought prone and suffer from frequent food shortages. The increasing trend of this number is threatening the food security situation of the whole region. Agricultural production and

productivity is very low due to erratic and unpredictable rainfall, pests, diseases, weeds, poor soil fertility and overall land degradation caused by overgrazing, soil erosion, deforestation, and cultivation of steep, fragile lands for too long which has resulted in loss of productivity of the land in the region. High population growth, diminishing landholdings, and lack of on-farm technological innovations have also contributed to the significant decline in productivity per household. Shortage of grazing area and unavailability of adequate forage has inhibited the development of livestock in the region. These trends have combined with the repeated effects of drought over the years, to substantially erode the productive assets of communities and households. Therefore, achieving food security at the household level has become the primary objective of the Regional Government. This can be achieved through integrated approach in increasing agricultural production and productivity. The Project activities are focused on selected chronically food-insecure woredas of the region.

The Project Document of the Amhara Micro-enterprise development, Agricultural Research, Extension, and Watershed management (AMAREW) states that its primary objective is to establish community-based paradigm shift within the Amhara National Regional State (ANRS) for the development of strong, long-term partnerships among collaborating universities, research and service institutions, ANRS bureaus, extension services, NGOs, and private sector entities in both the US and Ethiopia. The Project is generally aimed at assisting the ANRS to design activities, which will result in increased rural household income, thereby increasing food security. To address this overall objective, the United States Agency for International Development (USAID)/Ethiopia and Virginia Tech (as the Prime Contractor) signed Contract No. 663-C-00-02-00340-00 in June 2002 under the Rural Household Production and Productivity increased Strategic Objective (RHPP SO) to implement the AMAREW Project.

1.1 Project Purpose

The purpose of the technical assistance, training and management support provided by the project is aimed to:

- Build the capacity of ANRS researchers, research institutions, and research and rural technology development centers to conduct demand-driven applied research on low input, environmentally sustainable technologies that can be applied immediately to food insecure areas. This approach will emphasize adaptive research on crops, cropping systems, soil fertility management, water management, environmental rehabilitation, natural resource management, animal feed and food utilization practices.
- Build the capacity of the extension system to disseminate information on environmentally sound agriculture and natural resource management practices, and support other activities that improve the quality of life for rural households in a participatory manner.
- Build the capacity of the BoA and EPLAUA with regard to land use planning, land use policies and programs that involve community level management. Emphasis will be given to interacting with community watershed organizations to plan and implement activities in a participatory manner.
- Build the analytical, operational and management capacity of institutions within the context of reformed and strengthened research and extension services through the identification of long-term training, short-term training, in-service training, farmer demonstrations and linkages with other institutions.

- Serve as a long-term partner to the Ethiopian Agricultural Research Organization (EARO) and the Amhara Regional Agricultural Research Institute (ARARI) on all policy matters related to national and regional research strategies, food security, human resource development, employment generation and agriculture markets.
- Strengthen the capacity of existing Micro-finance Institutions (MFIs) and Business Development Services (BDSs) to efficiently provide appropriate and relevant services to rural households and create a measurable impact on the growth and diversification of rural household cash income source through activities concentrating on micro-enterprise development.
- Contribute generally to the solution of the Food Security Problems of the ANRS through addressing the RHPP SO of USAID Ethiopia.

1.2 Project Parts and Objectives

Project Parts

The AMAREW Project has three major parts:

- Part One of the project deals with Agriculture, Natural Resources and Watershed Management in ANRS;
- Part Two focuses on Micro-enterprise Development Activities in the Region; and
- Part Three covers Program-Wide Activities and Cross-cutting Themes such as HIV/AIDS, Gender, Capacity Building, Degree Training Arrangements, Distance and Distributed Learning.

Inspired by the service-oriented US land-grant university model of integrated extension, research and education, AMAREW also promotes the adoption of peer-to-peer collaboration between Ethiopian and US counterparts. Besides, AMAREW upgrades human resource capacities and reinforces the institutional relations between ARARI and BoA through joint planning and implementation of on-farm research and extension programs. AMAREW has been working with ACSI to establish a Management Information System for its banking services. It aimed also at working with the then ReMSEDA (now MSEIDB, Micro and Small Enterprises and Industries Development Bureau) to develop public and private sector Business Development Services practitioners at the woreda level.

Objectives

One of the stated objectives of the AMAREW project is to assist the efforts of the ANRS to bring about a major change in the process of planning and implementing agricultural research and extension, in such a way that farmers and all stakeholders would play a pivotal role in defining the course of agricultural research and extension. Accordingly, the two pilot integrated watershed management areas are serving as sites for integrating research, extension, watershed and micro-enterprise development efforts. Similarly, the five pilot extension woredas are serving as pilot woredas for functionally integrating research and extension at woreda level. Briefly, AMAREW works to strengthen agricultural research and extension, watershed management capacity, and micro-enterprise development in the ANRS by working in targeted and selected pilot food-insecure woredas.

1.3 Integration of Project Components

The Project staff as well as USAID/Ethiopia officials have discussed the issue of effective integration in the AMAREW Project at length during the last year. The integration of on-farm research, extension, and watershed activities addressed by the AMAREW project are demonstrated during the reporting period through joint planning and implementation of pre-extension trials and popularization of improved technologies at our five pilot extension woredas, seed multiplication at the center sites and farmer fields, as well as integrated activities at our two pilot watersheds. The selection of participating farm households, trial sites, and execution of on-farm verification and demonstration in each target woreda are conducted with the full participation of researchers, woreda extension staff (DAs), and the local farmers. The necessary planning is also being made for the next growing season to address more of the priority production and natural resources management problems and constraints identified by the communities.

In the five pilot woredas, the research and extension components of the Project are increasingly integrating their activities both at the planning and the implementation phases. The revision of the 2003 plan for the two pilot watersheds was also made with the participation of all the Project components and is now being implemented under the leadership of the watershed component. As we continue to progress with project implementation, joint research-extension activities in the five pilot woredas as well as in the two pilot watersheds will be strengthened.

There is an understanding that farmers who have been taking trainings in some technical areas such as fishery, beekeeping and poultry would next season benefit from trainings to be organized by the MED component in the areas of marketing, business development, credit and saving.

In an effort to identify possible successful rural development activities that could be replicated in the ANRS, Drs. Brhane, Fekadu, and Elias visited the successful Integrated Watershed Development activities of the Dire Dawa Catholic Secretariat and the water harvesting efforts being carried out by farmers around Wolenchiti town, east Showa zone. The observations made will be useful in preparing the AMAREW Project 2004 work plan.

1.4 Modalities of Implementation

The Virginia Tech led Consortium (Virginia Tech, Cornell University, Virginia State University and ACDI/VOCA) and its ANRS partners implement the AMAREW Project. Project implementation started at the beginning of July 2002. A Kick-off Workshop was conducted on September 19 and 20 to announce the launching of the Project, and to introduce the project personnel, partners, and stakeholders to each other. During this workshop the Virginia Tech Consortium and the Primary Partners of the Consortium in the ANRS, namely Food Security Program Coordination Office (FSPCO), Amhara Regional Agricultural Research Institute (ARARI), Bureau of Agriculture (BoA), Amhara Credit and Saving Institution (ACSI), and the Regional Micro and Small Enterprises Development Agency (ReMSEDA, now MSEIDB, Micro and Small Industries Development Bureau) were all present. ARARI is responsible for the planning and implementation of research while BoA plans and implements agricultural extension and watershed development activities in the pilot extension woredas and selected watersheds, respectively. Similar arrangements govern AMAREW's relationships with other ANRS partners. The technical advisors of AMAREW advise and assist their respective line department experts in planning and follow up of activities. The experts are assigned not to plan and implement activities by

their own but to advise and assist implementing institutions of the ANRS in the planning and monitoring processes. Accordingly, the 2003 plan was so designed and implemented by concerned institutions of the ANRS. Based on such plans, USAID-Ethiopia directly transfers funds for line departments to implement plans, while the Virginia Tech consortium covers the costs associated with hiring technical advisors. The AMAREW Project team has now brought a combination of foreign and local experts with sound technical expertise and development project management experience to meet the challenges the Project has been set to tackle.

The overall work of AMAREW is being coordinated and overseen by a Regional Implementation Team (RIT), chaired by the Deputy Head of the Bureau of Rural Development. RIT meets regularly, at least once in three months to monitor project progress. The RIT members are Heads (or their representatives) of BoRD, FSPCO, ARARI, BoA, ACSI, MSEIDB, EPLAUA, AMAREW, USAID, CPB, DPPC, BoFED, and MoFED. Concerned institutions of the ANRS, in consultation with technical advisors of AMAREW, prepare their plans and reports and submit to the RIT. The RIT reviews and approves plans and reports, before sending them to USAID/Ethiopia. The RIT has also been actively involved in the selection and recruitment of locally hired project associate advisors. As a result, the understanding by the project staff is that AMAREW is owned by the concerned bureaus of the ANRS.

1.5 Geographical Location

AMAREW Project operates in 10 targeted food insecure woredas of the ANRS, as shown in the Table below. The research component works in Kobo, Delanta Dawnt, Lay Gayint, Simada, , and Gera Keya woredas, while the extension component is underway in Sekota, Gubalafto, Tehuledere, Lay Gayint, and East Belessa woredas. The watershed component is being implemented in Sekota and Gubalafto woredas, and the Micro-enterprise development (MED) component was planned to be implemented in Tehuledere, Kalu, Lay Gayint, and East Belessa woredas. Since the Project is focusing on integrating all the components functionally at the field level, they are all active at the two pilot watershed sites in Sekota and Guba Lafto.

Component	Woreda									
	Sekota	**Guba Lafto**	**Kobo**	**Tehul-edere**	**Kalu**	**Delanta Dawnt**	**Lay Gayint**	**Simada**	**East Belesa**	**Gera Keya**
Research	X	X	X	X		X	X	X		X
Extension	X	X		X			X		X	
Wshd Mg	X	X								
MED	X	X		X	X		X		X	

1.6 Project Administration and Management

Administration

AMAREW Project became fully operational in January and February 2003, although one would say that the kickoff workshop in September 2002 officially inaugurated the start of the Project. The period between July to November 2002 was the time to search for office and residence premises for expatriate staff, ordering of office furniture and vehicles, advertisement for the recruitment of the staff and also setting up of bank accounts. Most of these tasks were accomplished by the beginning of the year 2003.

Figure 1. AMAREW Project office complex housing all project components

The majority of the professional and support staff joined the Project by January and February 2003. The bulk of the office equipment was purchased and delivered in February 2003. The Project vehicles were delivered in February 2003 but before their delivery, the movement of the Project staff to visit the Project field sites was very much restricted. The last important piece of equipment that was deemed to be vital at the time was a generator and this was bought and installed in July 2003. All the components of the Project have been fully staffed and optimally operational with the exception of the MED component whose senior staff (Gina Kuta and Tenna Shetarek) resigned by the end of the year 2003. The staff turnover for the MED component since the beginning of the Project slowed the progress of its activities.

To facilitate its operations further, the project has now established a satellite office in Woldiya by renovating an office in the compound of the Bureau of Rural Development of Gubalafto woreda. All the required office furnishings including telephone communication has been installed and is in use by the Project staff. The Project is also working on opening a similar office in Sekota.

Management

Representatives of all the VT Consortium members from the USA paid a visit to the Amahara Region from May 18 to 25, 2003 to review overall project management and progress on the ground. The AMAREW Project arranged a field visit program for the team to Sekota and Gubalafto wherein all senior AMAREW Project staff participated. The team visited and was briefed on site about the on-going and planned activities in the two pilot watersheds at Yeku in Sekota and Lenche Dima in Guba Lafto. Discussions were also conducted with the staff of the woreda offices and research centers at the two woredas.

Figure 2. VT Consortium members and farmers met and held discussions at the Lenche Dima Watershed

The team also made field visits to other related projects in the areas for experience sharing. At the end of the team's visit, AMAREW Project personnel made a one-day presentation in Bahir Dar to the visiting group and the RIT members on the activities and achievements of the AMAREW project since it started implementation.

To follow up project management and implementation issues, in October 2003, Dr. Michael Bertelsen, Associate Director of OIRED and Associate Dean of CALS at Virginia Tech, conducted an intensive week-long review and discussions with project staff and stakeholders in Bahir Dar and Addis Ababa and gave a number of Recommended Actions for Improving

AMAREW Project Management and Performance. Highlights of his recommendations are as given below.

The CoP/SRA must substantially disengage from the SRA role and move to an engaged and balanced oversight/facilitation role for all components. Now that the individual components have met first year start-up challenges, the greatest need is for an overall spokesman/advocate for the entire project. It is recommend that the Chief of Party (CoP) divide his time equally among the four project components and not provide any technical input to the research component beyond this allocation. The CoP must engage himself in oversight and facilitation proportionately more in extension, watershed management, and MED components.

The CoP must enthusiastically adopt and promote the watershed project and program integration model and become the spokesperson for this method of achieving and demonstrating project integration. The watershed project/program integration model does not imply the pre-eminence of the watershed component. Rather, the geographical limits of the targeted watersheds will physically house and integrate activities from all components of the project.

The CoP must be proactive in engaging the AMAREW professional staff in dealing with project management issues as well as implementation problems that should normally be discussed at the regular weekly staff meetings. He should present such problems for discussion as well as ask others to present their management issues during the regular weekly meetings. The professional staff of AMAREW is a largely untapped source of strategic assistance in dealing with management issues, problems and solutions. They are often times better situated to provide insight, support, and encouragement to fellow staff than management personnel. AMAREW is fortunate to have (past and present) an exceptional professional staff with broad technical experience and training that uniquely qualifies it to achieve project goals.

AMAREW components must engage their counterpart ANRS partners in a fully participatory manner in all activities. This includes program planning, budgeting, and implementation. Given the recent budget cut, all components should make extraordinary efforts to immediately engage and reach agreement with their ANRS partners on program and budgetary implications and priorities.

All components should adhere to standardized project policies and guidelines and scrupulously respect the project and contractor/subcontractor chain of command to resolve issues and problems. Under no circumstances will USAID personnel be approached outside of this chain of command for non-program issues and problems.

2. Project-wide Accomplishments and Problems

2.1 Project-wide Accomplishments

During the reporting period, the following are the major outputs and accomplishments of the AMAREW Project:

- Office establishment and related items

    - The project has secured an excellent office complex in Bahir Dar and rented it at a competitive price on a long-term basis. All project personnel have moved into their respective offices and are operating out of them.
    - Essential office equipment have been received and installed
    - The long awaited project vehicles have been received and are now in full use.
    - All offices are now connected to network printers.
    - Internet connections have been established for all senior staff, with one telephone dedicated for this purpose.
- Finalizing the assembling of qualified experts and establishing a fully functioning project office was a high priority activity of the year. The selection of senior project personnel was made in close collaboration with the AMAREW Project RIT.
- By the first quarter of 2003, the Project had completed the posting of all four key project personnel, namely Dr. Brhane Gebrekidan, Chief of Party and Senior Research Advisor, Dr. Kent Reid, Watershed Management Advisor, Ms. Angela Neilan, Extension Advisor, Mr. Richard Pelrine (replaced by Ms. Gina Kuta in March 2003), Micro-enterprise Development Advisor (MED). All four long-term project personnel quickly established contacts with their counterpart institutions and individuals and initiated project activities.
- AMAREW also completed hiring the following local project associates during the year: Dr. Fekadu Yohannes, Agricultural Research Associate, Ato Taye Hailu, Program Administrator, Dr. Elias Zerfu, Research/Extension Training Associate, Dr. Habtemariam Kassa, Agricultural Extension Associate, Ato Yitayew Abebe, Watershed Management Associate, and Ato Tenna Shitarek, MED Associate. All these were competitively selected and hired.
- AMAREW has opened both a foreign currency and a non-transferable (NT) account with Commercial Bank of Ethiopia in Addis Ababa and also a local Birr account in Bahir Dar with the same bank.
- Project personnel took part at the Research-Extension-Farmer Advisory Council (REFAC) meetings and field visits of 2003 and provided advisory inputs.
- Project personnel participated in several national and regional workshops and presented papers. Selected examples are:
    - The First National Sorghum Workshop at Nazreth (Melkassa) Research Center.
    - The Bahir Dar workshop on pea weevil *(Bruchus pisorum)* which is seriously threatening the continuing production of the crop in the ANRS.
    - Workshop on Natural Resources Management in ANRS, organized by the Ethiopian Social Rehabilitation and Development Fund (ESRDF) at Bahir Dar.
    - The Rural Development Bureau organized Workshop on Rural Household Socio-Economic Survey of 56 Woredas in the Amhara Region. AMAREW Project senior staff edited some of the reports, attended the workshop and participated in the discussions.
    - Workshop on "Improving the Natural Resource Base and Rural Well Being in the Ethiopian Highlands." organized by ARARI and FAO in Bahir Dar.
- AMAREW Project staff have been and continue to be involved in curriculum development and related issues in the establishment of the proposed Faculty of Agriculture and Environment in Bahir Dar University. AMAREW staff members are taking the lead in the development and review of B.S. degree curricula with the hope that the initiation of such a faculty under the Bahir Dar University in a slightly different way can bring about a paradigm shift in the region where training, research, and extension are integrated similar to the Land Grant Model of the USA.

- Agreements were made with Alemaya University to come up with standards on issues related to placement, choice of research area, financial requirement, and other issues regarding AMAREW project funded trainees. Furthermore, preliminary agreement on possible collaboration between AMAREW project (Virginia Tech) and Alemaya University were made.
- The Performance Monitoring Plan (PMP) of the project both at the Strategic Objective (SO) level, and for Intermediate Result (IR) level, along with their respective indicators, has been developed and submitted to partner institutions and USAID/Ethiopia for comments.
- Both Cornell and Virginia Tech have signed separate MoUs with Bahir Dar University to collaborate in areas of mutual interest.
- A Regional level Integrated Watershed Development and Management Team (IWDMT) has been established, and based on the experiences from the pilot watershed areas, is working towards developing an approach that will assist BoA in the management of watersheds in the Region.
- Community Watershed Management Organizations (CWMOs) established in the two watersheds (Yeku and Lenche Dima) have already begun playing lead role in determining the course of research and extension in the watershed areas. As a result, implementation of community-determined soil and water conservation interventions are underway.
- Area closures in the two watersheds have become social closures with no armed guards or fences, only by an agreement reached among the community members to exclude animals and to avoid cutting. The results are encouraging, in some cases impressive. Concerned Regional officials have visited both areas in October.
- Coordination of Activities
    - Continue to meet and collaborate with the R2D Project staff.
    - Several Regional Implementation Team (RIT) meetings were held since the beginning of the Project and the RIT made important decisions on AMAREW Project staff hiring, training plan, annual work plan, linkage between research and extension at the Pilot Woredas, etc.
- In the area of mini-grants, calls for proposals have been issued and a dozen proposals by both BoA and ARARI staff have been received and are going through the evaluation process.
- The nine-member researchers' group (ARARI and AMAREW staff), which made an educational visit to North Wello, South Gondar and Tigray, has produced a document, which describes and proposes actions in ANRS for a better natural resources management.
- The 2003 activity plans of BoA for the five pilot woredas were prepared jointly by Regional and Woreda level experts of the Bureau of Agriculture (BoA) and researchers of the Amhara Region Agricultural Research Institute (ARARI). As a result, the functional Research-Extension-Farmer linkage has been strengthened and the on-farm research trials plan for 2004 in the targeted mandate woredas of ARARI Research centers and extension interventions that would follow resulting from the on-farm research were planned with full involvement of farmers, extension staff and NGOs for the first time. Consequently, a framework that fosters effective linkages and working mechanisms between Research -Extension - Farmers at Woreda level are being developed. This is expected to substantially build the capacity at Woreda level as well.
- The eleven researchers and extension personnel sent to India for technology shopping and experience sharing have come-up with technologies and ideas that could be adopted

in ANRS. The researchers were sponsored by AMAREW while SIDA sponsored the extension personnel.

2.2 Project-wide Problems

The following project-wide problems were encountered at different stages of project implementation:

- Transportation for extended regional travel outside of Bahir Dar was not initially available.
- Significant budget cuts (60%) for Year 2 of the Contractor's portion of the Project have negatively affected the project. A number of planned activities of the project have become victims of the drastic budget cut. If budgets for ANRS partners are in place, although at lower levels than expected, and if they can be replenished on a revolving basis as promised, and not cut further, a good number of the field level activities should be implemented as planned in the future.
- Because of personal problems, the original MED Advisor left the project at the end of 2002. Finding and hiring his replacement have slowed progress in the MED component of the Project. The replacement, Gina Kuta, has also left the project recently. Staff turnover and resignations have been disruptive to the smooth functioning of the MED component of the Project.
- Problems related to delay in budget release by USAID owing to weaker financial reporting and liquidation of funds released earlier for institutions of the ANRS.
- Issues related to selection of woredas : While the project is supposed to bring about integration, many of the selected woredas lacked one or another component, making it difficult to bring about integration of research, extension, and micro-enterprise development at Woreda level.
- Limited experience of bottom-up and participatory planning in research and extension. Participatory planning and implementation of research and extension activities has just begun, though in some instances is proving difficult.
- Technology multiplication has still been a problem though farmers, BoA and ARARI are working together to addressing it, at least partially.
- Linking extension activities with adequate input and credit availability, and coordination among offices concerned seems to be weaker, especially at Woreda level.
- Finally, a community based approach takes time, and the AMAREW Project is perceived by some as providing very little money for the amount of work it requires to be accomplished and for the objectives it is set to achieve.

3. Research Component

3.1 Introduction

The Research Component of the AMAREW project falls under the RHPP Intermediate Results (IR)4: Food, agriculture, and environmental research systems strengthened.

AMAREW works with ARARI to strengthen its research program based on the ARARI Research Master Plan, and the Three-year Strategic Plan. The ARARI research centers have the mandate to serve the chronically food-insecure woredas in the region.

One of the objectives of AMAREW project is to build the capacity of ARARI to carry out on-farm research through

- Strengthening the on-farm research program
- Modernization/upgrading of the research facilities

This section of the Annual Report covers the accomplishments of the research component for the period January to December 2003 and is prepared jointly by ARARI and AMAREW.

3.2 Major Activities Planned for 2003

- Initiate installation of satellite uplinks and The Essential Electronic Agricultural Library (TEEAL) in ARARI in collaboration with Cornell University;
- Assess the need for modernizing ARARI's laboratory and communication systems and prioritize the needs;
- Assist ARARI in implementing on-farm trials and demonstration of identified technologies to farmers in the target woredas;
- Explore the possibility of initiating competitive grants and mentorship programs between scientists of collaborating US universities and ARARI/BoA researchers;
- Assess and identify areas where short-term technical assistance would be required;
- Work with ARARI in its efforts to refine the agro-ecological zonation of the food insecure woredas;
- Identification of research problems for the preparation of new proposals, and evaluate completed on-farm projects for dissemination in planning workshops with the full participation of stakeholders;
- Organize and arrange, together with the AMAREW Research and Extension Training Associate, different types of training and skill upgrading programs for ARARI researchers;
- Conduct frequent field visits with center research staff to the different sites in each target woreda to monitor the on-going on-farm trials; also participate in the Research-Extension-Farmer Advisory Council (REFAC) field evaluation tours and meetings organized by all the ARARI centers.

3.3 Accomplishments

On-farm Research

ARARI Research Centers have been handling with the support of USAID/AMAREW a number of on-farm trials in the target woredas at different sites (Table 1). The core objective of the centers is to generate improved agricultural technologies in the areas of crops, livestock, and natural resources and enhance production and productivity thereby contributing to the achievement of food self sufficiency and food security.

The on-farm trials were observed and evaluated during field assessment visits organized by the respective centers at planting/emergence of trials (July 2003), and during the Research-

Extension-Farmer Advisory Council (REFAC) field evaluation tours (November 2003) in which the AMAREW research and extension personnel were involved. Some of the sites and trials visited in each woreda are outlined below. Table 2 (shown at the end of the Research Component of this report) gives a summary of the number of on-farm trials of each research center in the mandate woreda(s) disaggregated by category (crop, livestock, and natural resources) and commodity.

Table 1. Target woredas and sites where on-farm research is conducted

No.	Research Center	Woreda	Sites
1	Adet	Lay Gayint	Yegul, Haya wenz, Gobgob, Gassay, Nefas Mewucha
		Simada	Sali, Sede Muja, Aguna, Wogeda, Koch, Soscham
		East Belessa	Guhala
2	Sirinka	Kobo Zuria	Awarie, Mendefera, Ayu, Robit, Aradom, Gobyie, Chori, Harmot, Kobo-Girana Valley project area
		Tehuledere	Jari, Mute Belg, Seglen, Tebissa, Godguadit
		Delanta	Gosh Meda, Felkakit, Asim, Chegoma
		Tenta	Abamela, Gofa, Kobo Ager, Baja, Bila, Kulbit, Yemit, Sengela
3	Sekota	Sekota	Maybulit, Aybra, Tsemera, Woleh, Zarota, Yeku
4	Sheno	Efratana Gidem	Lay Sar Amba, Mehal Wenz, Tach Sar Amba
		Kewet	Shoa Robit
		Gera Keya	Mehal Meda, Zemero, Tsehay Sina, Humer, Sina Amba
		Lalomama	Mollale

3.3.1 Adet Agricultural Research Center

The center generally undertakes research in the disciplines of field crops breeding, horticulture, agronomy, crop protection, animal feeds, soil and water management, forestry and agro-forestry, agricultural economics and extension, among others, at the following sites:

a) Simada Woreda

The testing sites of Adet RC in Simada woreda are located at Sali, Sede Muja, Aguna, Wogeda, Koch, and Sosecham. These areas represent the highland agro-ecology with mixed farming system. The activities of the center at each site are as follows:

Sali

Sali is located close to the Woreta-Woldia road enroute to Wogeda, the woreda capital. About two years ago the center had conducted wheat and food barely adaptation trials at this place and were completed. Currently, triticale and malt barely on-farm adaptation trials are being conducted in the location with the support of USAID-AMAREW project. There are five replications across location for each trial. At Sali, seed multiplication of wheat (*Shina*) and potato (*Zengena*) was also underway on farmers' plots with their full participation.

Sede Muja
Sede Muja is located about 13 km off the road to Wogeda. On a steep land, the center has been conducting a trial on different water harvesting techniques in improving the survival rate of tree seedlings for such species as *Cordia africana, Croton, and Acacia saligna.* The water harvesting methods are trapezoidal and semi-circular bunds.

Aguna
Aguna trial site is found about 5 km before Wogeda town (the capital of Simada). A trial was conducted on the investigation of the rates of closed area regeneration with and without water harvesting techniques. Enrichment planting was done in the closed area besides the natural regeneration. It is expected that results would be obtained that demonstrate the benefits of closing and managing a degraded area to the local communities. Though the trial is on-going, the results of area closure and water harvesting obtained so far could be extended to other similar areas in the woreda. Nevertheless, such an intervention (closing off communal lands) requires the full participation of the local communities.

Wogeda
Adet Research Center has a new permanent site at Wogeda with 0.5 ha of land given by the woreda Agriculture Office. Adaptation trials were being conducted on food and malt barley each with six varieties. Adaptation trials on tef, bread wheat, linseed, and triticale, and a regional variety trial on haricot bean were also underway at the site. Adet RC is involving the local farmers of the area in improved seed multiplication (participatory seed multiplication). This is done on small plots of farms (about $54m^2$). The reason for not using larger plots is that farmers tend to be consuming the produce from larger plots instead of using it for seed. The sites were selected in collaboration with Development Agents (DAs) and the Rural Development Office. This exercise has contributed to the strengthening of research, extension and farmer linkage at the grassroots level in the woreda. Seed multiplication at Wogeda is carried out for potato and wheat. The number of households (HH) participating in seed multiplication were 6 HHs for potato and 11 HHs for wheat.

Koch
Koch, about 5 km south of Wogeda town, was formerly used for a research and demonstration activity for roof-top water harvesting. Presently the trial site is moved to the new site at Wogeda. Koch is now solely used for seed multiplication. The area used for the purpose is only 441 m^2 obtained from farmers on a contractual basis with and without supplemental irrigation from a corrugated sheet metal roof top water harvesting. Seed multiplication is carried out for wheat (*Guna* variety) and field pea (*Sefinesh* variety).

Soscham
At Soscham, a trial on tie ridging and efficiency of fertilizer use for sorghum was being conducted. The treatments were tie ridge at 10 m, tie ridge at 5m, planting on the ridge, planting in the furrow, and flat planting (control). At a nearby farmer's plot, adaptation trials of 10 varieties of haricot bean and 8 varieties of maize were conducted during the season. The trial was in its second year. The first year trial for haricot bean failed due to hail damage, and that of maize due to moisture stress as a result of the early cessation of rainfall.

b) Lay Gayint woreda

Gassay (Awzet)

Gassay testing site was formerly used by the GTZ of South Gondar project for apple adaptation trial. It is now transferred to Adet RC, for temperate fruit trials. The site is currently used also as a source of apple seedlings grafted with compatible rootstock. The cool climate of much of South Gondar including Lay Gayint woreda is considered suitable for the production of apple, which has a high market potential and a promising income source for the local farmers. A potato trial was also being conducted by the center at the site. It is expected that the results of these trials would be extended to similar agro-ecologies in the target woredas.

Haya Wonz

The site is located in Kebele 2 about 7 km before Nefas Mewucha, the woreda capital. The area is generally frost prone. The two conditions for the occurrence of frost are shortage of rainfall and high altitudes that are characteristics of the woreda. It is believed that additional potash may reduce frost damage. Thus to investigate this, on-farm potassium fertilizer trial was being conducted. The crops used in the trials were faba bean and wheat. During the REFAC visit, it was observed that there was no difference in yield between the different K-levels and frost was yet being expected. The local practice is that if the rains are late, farmers prefer to grow early maturing type of crop to escape frost.

Yegul

The land was taken from CPAR (a Canadian NGO operating in the woreda). It is situated about 4 km before Nefas Mewucha, in Kebele 13. The research center is investigating at the site the seed setting of vegetable crops such as cabbage, carrot, and beetroot. The trial has revealed that these vegetable crops can set seed in Lay Gayint and hence could alleviate the seed shortage local farmers face and resort importing seeds at very high prices.

Gobgob

At Gobgob, a malt barley fertilizer trial was conducted during the 2003 season for seed quality. The Dashen Brewery Factory in Gondar has expressed interest for local production of malt barley instead of importing it. Low nitrogen content is one of the quality requirements of malt barely for brewery. If successful results were obtained by the fertilizer trial at Gobgob trying to address this issue, it would open a big market opportunity for the farmers growing malt barley.

Nefas Mewucha

A site obtained from BoA and having an area of 0.5 ha (50m x 100m) is currently used by the center for a variety of research activities. Food and malt barely adaptation trials, and triticale and linseed regional adaptation trials are some of the activities at the site. These are also replicated across sites on-farm with the participation of local farmers. On a 10m x 10m individual plot size, a variety verification trial on food barely with two candidate varieties, and a standard check together with a local variety was also being conducted.

East Belessa Woreda

East Belessa is a new entry for Adet Research Center. The trial site is located at the periphery of Guhala, the woreda capital (PA Kebele 22). Adaptation trials were being carried out on a rented farmer's field. The trials were on faba bean (4 varieties), field pea (5 varieties), teff (11 varietites), wheat (9 varieties), potato (7 varieties), haricot bean (10 varieties), maize (8 varieties), and sorghum (13 varieties). The trials were not properly managed, since the Adet

Research Center was unable to monitor the trials with frequent visits. Strengthening the linkage with the woreda Agriculture office should help improve the situation.

3.3.2 Sirinka Agricultural Research Center

a) Kobo Zuria Woreda

The center was involved in the pre-extension demonstration of striga resistant sorghum variety with three variables namely, improved variety with recommended practice, local variety with recommended practice, and local variety with local management practice. A total of 210 HHs were participating in the woreda in the pre-extension demonstration activities. The full participation of DAs is also ensured in the demonstration activities of the improved technology. The sites involved were: 01 Kebele , 07 Awarie, 03 Aju , Mendefera, Robit, Aradom,and Gobiye each on 30 HHs. The sorghum varieties were Abshir, Gobiye, and Birhan. At all the sites the farmers managed the plots after receiving the necessary training. The provision of seed and fertilizer was the responsibility of the research center. Tie-ridging was practised for all crop fields to conserve moisture. Meko variety (an early maturing sorghum variety) was also distributed by the center in the season to many farmers in the area. In spite of this, we have witnessed that farmers face severe shortage of seed of improved verities such as Meko.

Harmot

In an effort to introduce different agro-forestry tree species to local farmers, Sirinka Research Center has established a small tree nursery at Harmot River (3 km before Kobo town) within the nursery site of BoA. The agro-forestry tree species are *Gravilea robusta*, *Acacia ployacantha* (Magic tree), *Azadirachta indica* (Neem tree), *Shinius molle* (Kundo Berberee), *Casuarina equisitifolia, Acacia senegal*, *Morus alba* (Injori), and *Eucalyptus* spp.

Kobo (Awarie)

In a place called Awarie, near Kobo town, a pre-extension demonstration of improved vegetable crops such as shallot, sweet potato, and onion is being carried out by the center.

Kobo-Girana Valley

Pre-extension demonstration of Abshir and Gobiye sorghum varieties was carried out on 30 HHs in the Kobo-Girana Valley through the same project.

b) Tehuldere Woreda

The Jarie Chidren Village, located between Wuchale and Haik towns, was formerly run by an International NGO as a care center for orphans. Now the village is renamed as Jarie Integrated Development and Welfare Organization where the Sirinka RC has about three ha of land for seed multiplication of improved sorghum varieties as well as a range of forage crops. Pre-extension demonstration of Gobiye and Abshir sorghum varieties was also carried out by the research center on a total of 25 farmers in the woreda. The sites were 027 Kebele (Mute Belg, 5 HHs), 017 Kebele (Seglen, 5 HHs), 016 Kebele (Tebisa, 3 HHs), 013 Kebele (Jari, 6 HHs), 015 Kebele (Godguadit, 6 HHs). Seeds of improved sorghum varieties including Meko, Teshale and Yeju were distributed for popularization to a total of 640 farmers in the lowlands of the woreda.

c) Delanta Woreda

Pre-extension demonstration of Abshir and Gobiye striga resistant sorghum varieties was also conducted in Delanta woreda at 029 Kebele (Gosh Meda, 4 HHs), 045 Kebele (Felkake, 5 HHs), 027 Kebele (asim, 5 HHs), and at Chemega (HHs).

d) Tenta Woreda

Pre-extension demonstration of Abshir and Gobiye striga resistant sorghum varieties was also carried out by Sirinka Research Center on a total of 64 HHs in the lowlands of Tenta woreda at 03 kebele (Abamela), 018 Kebele (Gofa), 024 Kebele (Kobo Ager), 025 Kebele (Baja), 021 Kebele (Bila), 07 Kebele (Kulbit), 030 Kebele (Yemit), and at Sengela each with 8 HHs.

Sirinka RC

The Natural Resources Division is conducting a long-term evaluation of different acacia tree species (in a small arboretum) at the experimental farm of the center. The types of acacia trees observed are *Acacia polyacantha* (magic tree), *Acacia saligna*, *Acacia nilotica*, and *Acacia hockii*. The performance and adaptability of these trees are being recorded besides using them as a source of seed material for dissemination in similar other areas. *Acacia polyacantha* is fast growing and multipurpose (fodder, wood, soil fertility management).

Lenche Dima Watershed

The responsibility of conducting on-farm research in the watershed in the various disciplines has been given to the Sirinka RC. It was stated by the Research Center that a base-line survey on a pilot gully has been conducted and preparations for the implementation of physical and vegetative measures on the gully are underway.

3.3.3 Sekota Agricultural Research Center

Sekota Research Center was established about two years ago. Though the center has capacity problem with regard to staffing and facilities, it has undertaken quite a number of research projects at Tsemera, Aybra, Mybulit, Zarota, and Woleh sites.

Tsemera site

Tsemera site is located at 22 km north of Sekota town. On-farm trials are being conducted at the site on tie-ridging with eight different varieties of sorghum: Gambela 1107, 76 T1 #23, Meko, Gobiye, Abshir, Yeju, Teshale and a local variety.

Aybra

A wide range of agronomic, crop protection and natural resources trials were carried out at the experimental site in addition to seed production. The trials conducted were:

Crop protection: pea weevil control trials.

Agronomy: Alley cropping of pigeon pea with sorghum varieties, Sorghum adaptation trial (9 varieties), Regional Preliminary Variety Screening trials on sorghum (early maturing 16 varieties), Tef adaptation trials (10 varieties), Faba bean adaptation trial (7 varieties), Cowpea screening trial (130 varieties), Fertilizer rate x row spacing x plant spacing trial on local variety sorghum and wheat in RCBD with tie-ridging, and Sufflower with teff (local var.) intercropping.

Natural resources: Adaptation trials of tree and forage species. The tree species are: *Olea africana, Erythrina brucei, Acacia saligna.* The forage species were: Lablab, Vetch, peagon pea, cowpea, and Rhodes grass.

Maybulit

Maybulit is located near Sekota town. The center conducts at this site adaptation trials on durum wheat, bread wheat, and teff varieties.

Zarota

At Zarota, on-farm demonstration of triticale with and without fertilizer was conducted in the season on 5 HHs. Two varieties of triticale (*Minet* and *Sinan*) were used for the trial. It was observed that the crop field was not properly managed. Farmers in the area work only for 12-20 days in the critical months of the season (June – September) due to the multiplicity of religious holidays. This creates an artificial labor shortage for important field practices.

Woleh

The Woleh site is located adjacent to Yeku watershed in Sekota woreda. A striga resistant sorghum variety trial including Gobiye, Abshir, and Birhan was conducted. During the field visit, farmers stated they abandoned growing sorghum due to the failure of the small rains (*Belg* season from April-June). If early maturing (short duration) varieties such as the ones in the trial were available to be planted in the *Meher* season starting June/July, they would prefer growing sorghum.

3.3.4 Sheno (Debre Berhan) Agricultural Research Center

a) Efratana Gidem woreda

At a site called Lay Sar Amba (2200 m a.s.l.) located about 20 km from Ataye town, the center conducted a potato regional variety trial with five varieties (*Gera, Gorebella, Zengena, Guassa, and Wechecha*). From previous year results, Gorebella gave higher yield and is recommended for drought prone areas because it can be harvested in 3 months. The major problem faced in the area was late blight disease, porcupine, and shortage of seed material for planting. Close to the same site, an on-farm demonstration of Gera and Gorebella potato varieties was conducted. The yield potential of the two varieties was 360-460 Qt/ha. At Tach Sar Amba (1600 m.a.s.l.), the center conducted an on-farm evaluation of weeding time and weeding frequency on teff, with and without fertilizer. This trial was also replicated at Rassa, Medina Kebele (in Kewet woreda).

b) Kewet woreda - Shoa Robit

In the area of natural resources management, the center conducts at Shoa Robit a trial on investigation of rates of closed area regeneration with and without water harvesting (WH) techniques (trench). The five treatments are: closed area without WH and enrichment planting; closed area with enrichment planting (*Kesele* a local acacia); closed area with WH and enrichment planting; closed area with WH; farmers' practice of burning for natural regeneration. The closed area is communally owned. Monitoring of the downstream effect of area closure on runoff and sediment has not yet been considered by the center in the research design. Farming communities in the surrounding area have spontaneously adopted area closure after having observed the benefits. The trial is replicated by the center at Mehal Meda in Gera Keya woreda. A second trial adjacent to the above one in natural resources conducted by the center was on evaluation of different water harvesting techniques for

improving the survival rate of tree seedlings. The WH treatments were pit (local practice), half-moon, eye-brow, and trench. The trial is also replicated at Mehal Meda in Gera Keya woreda. Trench showed a better performnance at Shoa Robit while eyebrow was better in Mehal Meda. Planting was done on the ridge in the eyebrow and at the point of water collection in the case of half-moon WH.

c) Gera Keya woreda

Mehal Meda

Sheno Research center has conducted on-farm demonstration trials of potato varieties with their production package. The varieties were Gera and Gorebella. The farmers' assessment and field evaluation revealed that both varieties gave comparable and good yields. Three HHs in the area were involved in the demonstration trial. The trial was replicated at four other sites in the woreda (Zemero, Tsehay Sina, and around Mehal Meda). The center also conducterd a trial on the effect of potassium (K) on yields and frost resistance of potato and faba bean each at separate sites on two types of soils (light and heavy soil) around Mehal Meda. Four levels of inorganic fertilizer including the control were used for the trial.

Zemero and Tsehay Sina

The trial conducted by the center at Zemero and Tsehay Sina was on-farm evaluation of food barley, improved bread wheat, and faba bean with their production package. The improved barely variety was Yemisrach, and the local variety Fekre. The improved wheat variety used was HR 1899 and ET 13. An additional trial conducted at Tsehay Sina was on the effect of management factors on seed yield and other management characteristics of lentil. The variety used for the trial was local with sowing date of early to mid-season to escape frost. The reason for the initiation of the project was that lentil came out of production in the area due to water logging and associated disease problems. Hence flat planting and raised beds were used as treatments of the trial. A location-specific fertilizer trial on wheat was conducted at the same site with 6 varieties and 8 levels of fertilizer application. The suggestion was made during the evaluation tour that even though location-specific is better than the blanket BoA recommendation, there is still the need for soil test-based recommendation as there are currently several soil laboratories emerging in the region.

Humer

Observation was made on on-farm experimentation of forage vetch supplement for sheep forage at Humer 025 Kebele, located near Mehal Meda. Fattening of sheep during the dry season for marketing in the Easter Holiday is recommended. To resolve the seed source problem, the Kulumsa EARO Center is said to be a good potential seed source. In addition to sheep fattening, growing vetch improves soil fertility. Growing vetch in rotation with wheat and barely instead of the local practice of fallowing the land is recommended.

Sina Amba

The center undertakes at Sina Amba an on-farm demonstration and genetic evaluation of cross-breed sheep. This trial is replicated at Cheffa (North Shoa) and at three places in Guder (South Wollo). Menz sheep have low performance due to the problem of feed and restricted market-outlet unlike that of Cheffa.

d) Lalomama woreda

Mollale
The trials at Mollale conducted by the center are: (1) Pre-extension demonstration of potato varieties (Gera and Gorebela) and Potato Regional Variety trial with 9 varieties.

3.3.5 Kombolcha Agricultural Research Center

The Kombolcha Poultry Center serves the region by making day-old and/or three-months old Rhode Island Red chicks available to farmers. The center also works on a wide range of farm implements and related improved technologies for use by farmers.

3.3.6 Seed multiplication of improved varieties

Shortage of planting material of improved varieties in adequate quantity is one of the major problems faced by farmers in the target woredas. Released varieties without the provision of adequate planting material do not bring about food security to farmers.

In response to the dire need of farmers in the target woredas, Adet and Sirinka research centers have been occupied in seed multiplication of improved varieties of field and horticultural crops on farmers' fields through participatory seed multiplication scheme. In selected woredas, seed multiplication and diffusion of improved crop varieties was also undertaken through high school students.

In addition, seed multiplication of different improved crop varieties was undertaken during the 2003 plan period on relatively large farms at the following sites:

Adet RC: *Debre Tabor* – Triticale, bread wheat, faba bean, and barely
Simada/Wogeda – Potato, bread wheat, linseed
Simada/Koch – Bread wheat, field pea
Sirinka RC: *Kobo sub center* – Sorghum, chickpea, haricot bean, cowpea, sesame
Harmut – Agro-forestry tree species (a small nursery)
Tehuledere - Sorghum (Jarie Children Village)

Based on the partnership of AMAREW Project with CRSP universities, 30 quintals of certified seed of three Striga resistant sorghum varieties (Abshir, Birhan and Gobiye) were offered free of charge by Professor Gebissa of INTSORMIL/Purdue University. The seeds were distributed to farmers through the Sekota and Sirinka research centers and the Worda Agriculture Office for demonstration and popularization in the striga-affected target woredas including the two pilot watersheds (Yeku and Lenche Dima).

AMAREW also arranged for a local consultant, Dr. Haile Michael Kidane Mariam (formerly working for CIP as potato seed production specialist), to assess the potato seed production capabilities of ARARI and suggest ways and means of improving and strengthening the same. The consultant visited ARARI potato research and production sites during the second half of June. He forwarded a number of recommendations to ARARI to improve its farmer-based potato seed production strategies, renovating and improving facilities for rapid seed multiplication, including the planned Tissue Culture Laboratory, which is expected to be equipped with USAID/AMAREW funds. He also gave a seminar on potato seed production to the research staff of Adet Research Center.

Farmers have been forced to buy imported vegetable seeds every year at high prices. If vegetable crops are exposed to chilling temperature at appropriate stage of growth, seeds of many of these crops can be produced locally. With this objective, Adet Research Center has also taken the initiative of seed production of cool season vegetable crops like head cabbage, carrot and beet root in Lay Gayint woreda.

3.3.7 Technologies selected for dissemination

The ARARI Research Centers have developed and tested a number of agricultural and natural resources technologies that can be taken up by the extension or other stakeholders for dissemination to the farming households in the target woredas. Farmers and extension agents evaluated these technologies jointly in Farmer Field Days and in the Research-Extension-Farmer Advisory Council (REFAC) field evaluation tours and meetings organized by each Research Center during the reporting period.

Figure 3. Pre-Extension demonstrations such as this improved tef variety field serve as a forum for strengthening Research-Extension Linkage

Planning workshops for 2004 were also conducted by each Research Center, where AMAREW Project staff, ARARI researchers, woreda agriculture experts, farmers and NGOs from the target woredas participated. The completed on-farm research projects were jointly evaluated for technology dissemination. The types of technologies that have been reported as complete and recommended by researchers from the 2003 on-farm trials for dissemination/seed multiplication in each target woreda are as outlined below:

a) Sheno (Debre Berhan) Research Center

The crop varieties selected for dissemination in the target woredas of Debre Berhan research center are:

- Bread wheat varieties: HAR 1868 and HAR 1899 are recommended with their production package for Molale and Mehal Meda. They gave the highest yield of 30 and 31 q/ha, respectively.
- Potato varieties: Gera and Gorebella were found to perform well in Mollale and Mehal Meda. The average yield of Gorebella was about 300 q/ha, and that of Gera 256 q/ha.
- Barley variety: Kulumsa 1/88 (Misrach) with an average yield of 25-34 q/ha for mid-altitude to highland areas such as Asagirt is recommended.
- Integrated approach for the control of Russian Aphid (Tie-ridging, seed dressing, and use of fertilizer) on barley (Yemisrach)
- Sheep fattening: On-farm supplementation of grazing sheep with vetch at 500 gm/day during the dry season.
- Area closure combined with rainwater harvesting for regeneration of degraded lands.
- Different water harvesting techniques (Eye brow, half moon, and collection trench) for improving the survival rate of tree seedlings.

b) Adet Research Center

At the Research-Extension planning workshop of Adet Research Center, the following technologies were selected for dissemination in the target woredas:

- Potato varieties: Tolcha and Zengana. Tolcha is more adaptable to mid-altitudes and highlands, and is tolerant to late blight. Zengana has a wider adaptation ranging from drought prone to high rainfall areas. It gives higher tuber yield (300-355 q/ha).
- Bread wheat varieties: HAR 1868 (Shina), and HAR 1685 were found to be the best varieties for Lay Gayint both in their grain yield and earliness. Their grain yield is about 30 q/ha. At Simada HAR 1685 and HAR 1889 performed well and gave similar grain yields.
- Food barley varieties: Abay, Kulumsa, and Shegie looked good for Lay Gayint and Simada woreda. Abay was found to be very good in its grain yield out of the six varieties tested, followed by Kulumsa and Shege with average grain yields of 23, 21, and 19 q/ha, respectively.
- Malt barley varieties: HB 1533 and Holker for Lay Gayint woreda, and HB52 for Simada are recommended. HB 52 gave 31 q/ha at Simada and HB 1533 gave 21 q/ha while Holker gave 26 q/ha in Lay Gayint.
- Tef varieties: Those selected for earliness, panicle length, straw biomass, and seed color were DZ-cr-99, DZ-cr-37, DZ-cr-82, and DZ-01-196 which gave a mean grain yield of about 13 q/ha.
- Chickpea variety: Marye was best yielder (17q/ha) in Lay Gayint woreda and recommended for further multiplication and dissemination.
- Area closure combined with rainwater harvesting for regeneration of degraded lands in Simada woreda is recommended.
- Different water harvesting techniques (Eye brow, half moon, and collection trench) for improving the survival rate of tree seedlings in Simada woreda are recommended.

c) Sirinka Research Center

- Groundnut: Shulamis variety which gave 40 q/ha yield is recommended for Kobo area.
- Potato varieties: Menagesha and Tolcha are recommended for Delanta
- Bread wheat variety: HAR 1899 and HAR 1775 are recommended for Delanta.
- Sorghum varieties: Striga resistant varieties such as Abshir and Gobye (25-30 q/ha); Meko and Yeju (25-35 q/ha), Teshale (35 q/ha) are in general recommended for the lowlands of Wollo.
- Livestock:
    - The oat variety Lampton was found to be best adaptable to the area.
    - Evaluation of oat/vetch mixture in Meher fallow was also conducted by the center. A seeding rate mixture of 75 kg/ha oat with 25 kg/ha vetch gave the highest yield. The recommended time of harvest was at 10-50% flowering.
    - On-farm supplementation of grazing sheep with vetch hay and wheat bran mixture showed significant increase in weight of sheep and net profit during the dry season in Delanta.
- Natural resources:
    - In an adaptation trial conducted in Delanta, tree species such as *Eucalyptus globulus, Hagenia abyssinica, Acacia saligna, Acacia melanoxylon, Cupressus lusitanica*, and *Salix subserrata* showed good performance with survival rate of 51-77%, hence they are recommended for the high lands of Wollo.
    - Area closure combined with rainwater harvesting for regeneration of degraded lands was investigated and recommended in Delanta and Kewot woredas. The survival rate of seedlings planted was 67% in Kewet.

d) Kombolcha Research Center

Mechanization/Farm implements: At the Kombolcha Research Center, Single yoke harness drawn by ox, Single harnessing system drawn by camel, Treadle and Chain & Washer water pump were all developed, tried, and recommended for a range of locations in the region.

3.3.8 Small Grant and Mentorship Program (SGMP)

The purpose of this program is to link young researchers of ARARI and BoA with senior scientists of selected CRSP related US universities to collaborate in carrying out research projects in various disciplines. At the same time, the aim is to encourage the integration of research and extension in the formulation and conduct of research projects in the target woredas.

Based on the format and guidelines developed by AMAREW and endorsed by ARARI for the Small Grant and Mentorship Program (SGMP), 12 research proposals have been submitted by staff from the various research centers and BoA. They are now being reviewed after which selection would be made based on the criteria set in the guidelines.

3.3.9 Collaboration with INTSORMIL and Ethiopian Universities

During the year a strong collaborative relationship between AMAREW and INTSOMIL CRSP (International Sorghum and Millet Collaborative Research Support Program) Purdue University, Prof. Gebisa Ejeta, have been underway. About 30 quintals of seeds of three Striga resistant sorghum varieties were airlifted from West Lafayette, IN to Addis Ababa. AMAREW facilitated the seed clearance and distribution of the seeds for planting in appropriate sites in its project area. Our field observations during the growing season have shown that the varieties performed well at most of the sites. The final yield results are awaited from the Sirinka Research Center.

Figure 4. One approach to tackling the Striga menace is to use a resistant variety such as the one shown above (obtained from Professor Gebisa Ejeta of INTSORMIL CRSP Purdue University).

Another collaboration with INTSORMIL has involved Dr. Charles Wortmann of the University of Nebrasaka who visited the Sirinka Research Center (SRC) during the year. INTSORMIL is involved, among others, in research and training in soil and water management on sorghum and millet crops in developing countries. The fact that Kobo and Gubalafto woredas, both mandate areas of SRC, are among the major sorghum producing areas in the region, makes the center a potential collaborator with INTSORMIL. A tentative agreement was reached between the center, INTSORMIL, and AMAREW to conduct a joint training program on sorghum crop management and the use of tie-ridger and row planter, developed by Melkassa Research Center, in the popularization and dissemination of improved sorghum varieties in the target woredas.

Agreement was reached on the following:

Topics to be covered:	Agronomy, Mechanization, Extension, and Socio-economics.
Target dates:	February – March 2005 for one week at Kobo sub-center.
Potential trainees:	25 to 30 DAs from BoA and TAs from ARARI.

During a trip to the Alemaya University by AMAREW research and training staff during the year, agreement was reached on involving graduate students from the ANRS partner institutions sponsored by USAID/AMAREW project on agricultural and environmental

priority research problems in their M.S. thesis work. This was agreed upon between the university and AMAREW, as this would contribute greatly to the increase of ANRS research output. It was also agreed that potential thesis advisors existing in the ANRS regional institutions will be engaged in advising.

With regard to collaborative work with Bahir Dar University, the AMAREW project has been actively involved in the development and review of B.S. degree curricula for the newly proposed Faculty of Agriculture of the Bahir Dar University to cater for the long-term trained manpower needs of the region in particular and the country in general. A mini-workshop was organized in August 2003 to discuss the new curricula. The AMAREW project has made significant contributions in this regard in that the Project staff have taken an active and lead role in curriculum writing and the conduct of the mini-workshop. The planned programs in the Bahir Dar University are innovative and unique to the higher education system of the country. It is believed that the initiation of such a program of training would contribute to the capacity building of the ANRS partner institutions including ARARI and BoA. Generally speaking, the initiation of a Faculty of Agriculture and Environment under the Bahir Dar University can bring about a paradigm shift in the region where training, research, and extension are integrated in the fashion of the land grant model.

3.3.10 Capacity building

Modernization/Upgrading of ARARI's Laboratories/facilities

The delay in the realization of modernization/upgrading of ARARI research facilities, namely the procurement of laboratory equipment, GIS facility, networking of centers with each other and Head Quarters, etc. has slowed the capacity building program of ARARI. However, a continued effort is being made to address these issues again in the year 2004 Work plan.

Field visits and study tours

From June 8 to June 15, 2003, Drs Brhane, Fekadu, Elias of AMAREW and Dr. Enyew Adgo, Director of Natural Resources Directorate of ARARI, led a team of seven researchers of Sekota and Sirinka Research Centers in an Experience Sharing Visit in natural resources management to South Gondar and North Wollo Zones and Tigray Region. The experiences of the GTZ gully rehabilitation and tree and grasses nursery projects at and around Debre Tabor, the SOS Sahel Project on area closure near Meket, and that of Wukro, Adet Nadir, and Adaw Woredas' Agriculture Bureaus in Tigray in area closure, soil and water conservation, and integrated watershed management was shared with the team. The findings and observations of the team have been documented in a special report.

Based on the objectives and principles with which the AMAREW project is designed, namely, integration of research, extension and watershed management activities, a one-day meeting was held by Drs. Fekadu and K. Reid, and Ato Yitayew with the rural community members at Lenche Dima and Yeku watersheds for a preliminary discussion on priority research problems in crop and livestock production, and natural resources. The trip to the two watersheds was conducted from June 15 to June 19, 2003, immediately following the Experience Sharing Visit in Tigray. Two research staff of the centers also participated in the respective watershed community meeting. The communities identified quite a number of agricultural and environmental problems that can be addressed by the respective research centers (Sirinka and Sekota). For the 2003 crop season a few research problems in crops and

natural resources were selected, while the rest of the problems identified are planned for the coming cropping season after technical evaluation by ARARI Research Review procedure.

Towards the end of the plan period (November 2003) AMAREW Research, Extension and Training advisors participated in the Research-Extension-Farmer Advisory Council (REFAC) field tours organized by the four Research Centers of ARARI (Sheno, Sirinka, Sekota, and Adet) to evaluate the on-farm trials conducted in the mandate woredas that are supported by USAID.

3.3.11 Conferences/Workshops/Meetings

AMAREW project research staff have actively participated in regional and national conferences and meetings and shared their experiences. The following are some of the forums where AMAREW Research Advisors participated:

ARARI's Annual Research Review meeting

AMAREW participated in the Annual Research Review meeting of ARARI in January 2003 where completed, on-going and new research proposals of all the research centers were presented and critically reviewed. The on-farm research projects conducted in the target woredas that are supported by USAID were also addressed during the review meeting.

Workshop on ESRDF's work plan

The Ethiopian Social Rehabilitation and Development Fund (ESRDF) organized a workshop on evaluation of its projects in the ANRS and to prepare a work plan in natural resources projects. This workshop was attended by AMAREW.

Training Workshop on Strategic Planning

AMAREW attended the Training Workshop on Strategic Planning organized by ARARI for all research staff of the centers and Head Quarters that was conducted by a consultant hired by AMAREW. The training was offered in preparation for the 3-year Strategic Planning of ARARI.

Symposium on Situation Analysis and Prevention of Famine in the Amhara Region

Drs. Brhane and Fekadu participated in the symposium on Situation Analysis and Prevention of Famine in the Amhara Region from May 15-17, 2003, that was organized by ARARI. Dr. Fekadu had previously reviewed many of the symposium papers for selection and served during the symposium as a panelist in one of the sessions.

R2D Regional Familiarization Workshop

AMAREW staff participated in R2D Regional Familiarization Workshop on May 16, 2003, that was called to familiarize and update participants on the progress of Relief to Development (R2D) Project for Sekota and Gubalafto Woredas, which is a project supported by USAID. R2D grain resources are used for the watershed development activities of the AMAREW Project in the two pilot watersheds of Yeku and Lenche Dima.

Strategic Plan Workshop

Drs. Brhane and Fekadu participated in the Strategic Plan Workshop organized by ARARI from April 10 to 12, 2003 where the 3-year strategic plans of all the Research and Technology Promotion Centers of ARARI were presented and discussed.

Workshop on Rural Household Socio-Economic Survey

The Rural Development Bureau from April 1-3, 2003 organized a Workshop on Rural Household Socio-Economic Survey of 56 Woredas in the Amhara Region. The two research personnel of AMAREW also attended this workshop.

BoA Woreda Action Planning Workshop

As AMAREW project advocates the integrated planning and management of activities at the woreda/household level, the two research personnel were actively involved and participated in the BoA Woreda Action Planning workshop jointly organized by the Extension personnel of AMAREW and BoA. The pilot woredas addressed first in this planning workshop were Gubalfto, Lay Gayint, and Tehuledere.

2004 On-farm Research Planning Workshops

A Planning workshop was organized by each Research Center (Sheno, Sirinka, Sekota, and Adet) in November and December 2003 at Debre Berhan, Dessie, Sekota and Nefas Mewucha towns respectively to evaluate those completed on-farm projects for demonstration/dissemination/seed multiplication and identify priority research areas for the 2004 work plan. Participants of the workshops were researchers, woreda Agriculture Office Heads and extension staff, farmers, AMAREW staff and NGOs operating in the target woredas.

3.3.12 Integration of Research with other Components

The integration of on-farm research, extension, and watershed activities, and hence the different components of AMAREW, are demonstrated during the reporting period through the implementation of pre-extension demonstration trials and popularization of improved technologies, and seed multiplication at the center sites, farmers' fields and the two pilot watersheds.

The selection of model farm households, trial sites, and execution of on-farm verification and demonstration in each target woreda were conducted with the full participation of researchers, woreda extension staff, and the local farmers.

Sirinka and Sekota Research Centers have been involved in the conduct of some trials in Lenche Dima and Yeku watersheds during the 2003 season. Moreover, researchers of the respective research centers and AMAREW Research Advisors, including farmers, woreda extension staff and NGOs were also involved in the 2004 Watershed Planning Workshops that took place at Woldia and Sekota between the end of November and the beginning of December 2003. On-farm research plan has been prepared for the 2004 season that addresses some of the priority production and natural resources management problems/constraints identified by the communities.

3.3.13 Performance Monitoring Plan (PMP)

PMP has not been formally established for the AMAREW project and the ANRS partners. In order to identify and record achievements during the reporting period or the life of the project, a draft PMP has been developed with verifiable and quantifiable indicators including targets and baseline data and submitted to ANRS partners and USAID/Ethiopia.

3.3.14 Problems encountered

The sudden high staff turn over of some ARARI research centers such as Sekota during the season has adversely affected the planned research activities in the target woredas. This problem is particularly manifested in the area of natural resources. From Sekota research center, a total of 7 researchers have left their center for various reasons including training leave and resignation from their duties. From Sirinka, three experienced researchers in the area of natural resources have left for further studies abroad. The centers are expected to continue the research activities with newly employed young staff.

The delay in the realization of modernization/upgrading of ARARI research facilities, namely the procurement of laboratory equipment, GIS facility, networking of centers with each other, etc. has slowed down the capacity building program of ARARI.

Table 2. Number of USAID AMAREW Project supported on-farm trials of ARARI research centers in the target woredas (January –December 2003)

No	Activity	Unit	Adet Research Center		Sirinka Research Center			
			Lay Gaint	Simada	Kobo	Tehuldere	Delanta	Lenche Dima Watershed
1.	Plant Resources Research	No.						
1.1	Field crops (cereals, pulses, oil crops)							
1.1.1	Adaptation		8	8	3	2	2	
1.1.2	Verification		1	1				
1.1.3	Pre-extension demonstration		30	1	3	1		
1.2	Agronomy							
1.2.1	Adaptation		3			1		
1.2.2	Verification							
1.2.3	Pre-extension demonstration							
1.3	Horticulture							
1.3.1	Adaptation		5	1		1	2	
1.3.2	Verification				1			
1.3.3	Pre-extension demonstration			1	3	1		
1.4	Crop protection							
1.4.1	Adaptation				4		1	
1.4.2	Verification							
1.4.3	Pre-extension demonstration							
2	Natural Resources Management Research							
2.1	Adaptation						3	
2.2	Verification				1			
3.	Animal Feeds, Nutrition and Health							
3.1	Adaptation		2				4	
3.2	Verification							
3.3	Pre-extension demonstration			1				

Table 2 Continued

No	Activity	Unit	Debre Brehan Research Center				Sekota Research Center	
			Gera Keya	Efratana Gidem	Kewot	Lalomama	Sekota	Yeku Watershed
1.	Plant Resources Research	No.						
1.1	Field crops (cereals, pulses, oil crops)							
1.1.1	Adaptation		4	3	3	2	11	1
1.1.2	Verification		3			3		
1.1.3	Pre-extension demonstration		9			4		
1.2	Agronomy							
1.2.1	Adaptation		2					
1.2.2	Verification		3					
1.2.3	Pre-extension demonstration						1	
1.3	Horticulture							
1.3.1	Adaptation			3	1	1		
1.3.2	Verification		1			1		
1.3.3	Pre-extension demonstration		5					
1.4	Crop protection				3			
1.4.1	Adaptation			2				
1.4.2	Verification							
1.4.3	Pre-extension demonstration							
2	Natural Resources Management Research							
2.1	Adaptation		1	1	2			
2.2	Verification							
3.	Animal Feeds and Nutrition, and Health Research							
3.1	Adaptation		2	1	3			

4. Extension Component

4.1. Introduction

The Extension component of AMAREW has been working towards strengthening the human and institutional capacity of BoA in general and the extension service in the five pilot woredas in particular to identify and effectively disseminate food, agriculture and environmental technologies and relevant information to rural households. The extension component focused on two interactive and interdependent programs to build the capacity of the extension system, an in-service training and technology/information dissemination programs. In line with the contract document, the 2003 Plan of Operation was prepared and submitted. But given the realities on the ground (that Development Agents were sent to school, colleges training the DAs to a diploma level already had their own curricula, decentralization process required and encouraged Woreda based development planning, etc.) and to make sure that Woreda level experts and researchers of ARARI were actively involved in designing the 2003 extension plan of the pilot woredas, the initially planned activities of extension for 2003 (indicated in the 2003 annual plan) were revised in April. Due to problems associated with liquidating and reporting of funds released earlier and subsequent delays (until July 2003) in releasing funds for this component, many of the season specific activities such as introducing new crop varieties had been seriously affected, and the plan had to be revised anew in August 2003. Implementation of planned activities in the pilot woredas began soon after. As the planting season was largely over, much of the activities concentrated on training, and preparing grounds for better work in 2004. Accordingly, the sections below report on the activities of the Extension Component during 2003. The report is organized under six sections. The first section presents major planned activities for 2003. The second one is a narrative description of activities accomplished, followed by a figurative report, of planned versus achievements. The fourth section addresses issues of integration at project level and institutional linkages. The fifth sections attempts to relate component performance to project objectives and performance indicators, whereas the sixth one describes some problems observed during implementation and measures taken to address them. Additional efforts to addressing these problems certainly contribute to smooth implementation of project activities in the future. The final section presents concluding remarks.

4.2. Planned Activities for 2003

The major activities planned to be implemented during 2003 were:

- Training of trainers in Participatory Experiential Adult Learning Methods for teachers of Junior Colleges (where development agents are being trained), and for selected subject matter specialists and experts working at the Regional BoA and at Woreda Agricultural Development Offices in the ANRS.
- Upgrading the skills of Home Agents serving the 5 Pilot Extension Woredas.
- Assist in forging a functional link between BoA and ARARI at wored level to jointly plan and implement on-farm research and extension activities.
- Assisting the five extension woredas in the planning and implementation of their action plans for 2003 (including documenting the process and the outcome) by playing a facilitating role to bring together experts of BoA (from the Regional and Woreda levels) and researchers of ARARI through a joint Woreda level annual extension planning workshops. This would facilitate building a working multi-

disciplinary team of Subject Matter Specialists (SMS) and researchers at Woreda level.

- Working on PMP of the project in general and performance monitoring indicators of the extension component in particular.
- Provide technical support and professional assistance to partner agencies in the areas of agricultural extension and related fields.
- Continue with the inventory of technologies and information for use by the extension system in the Region.
- Establishing contact with Family Health International (FHI) to assist efforts in relation to HIV/AIDS (e.g. linking FHI with anti-AIDS clubs at ATVET colleges).

4.3 Activities Performed

4.3.1 Capacity Building

As the Project is operating in food insecure and less accessible woredas, most staff stationed there are young with limited experience. Thus, activities aimed at building the capacity of experts through training have been conducted during 2003. For further information on these activities please refer to the reports of the training component in Section 6 of this Annual Report.

4.3.2 Woreda Level Technology/information Dissemination and Training

The major activities undertaken in the pilot extension woredas are presented below.

- Recent developments in BoA (the majority of DAs in the pilot woredas were sent to junior colleges, and the fact that these colleges had their curricula, prepared by the Federal Ministry of Agriculture), have influenced the practical implementation of some of the initially envisaged bottom-up planning of extension activities and the preparation of training modules for DAs. As a result, revising the extension activities indicated in the 2003 plan was necessary. Accordingly, three separate workshops were conducted to assist the five extension woredas prepare their extension plans for 2003. The first one was held in Bahir Dar where plans for Gaynt, Tehuldere and Gubalalfto woredas were prepared. The second one was undertaken at Gohala, and the third in Sekota, as Belessa and Sekota woreda experts could not attend the workshop in Bahir Dar. Regional and Woreda level experts, AMAREW staff, and experts from ARARI took part in these planning workshops. Consequently, the original 2003 extension plan, prepared at the beginning of the year, was revised in such a way that much of the activities would aim at achieving the RHPP Strategic Objective of USAID/Ethiopia. (A proceeding that documented the process and outcome of these extension activities planning workshops has been compiled).
- At the beginning of the third quarter, the budget released for implementing the 2003 extension plan reached the Regional BoA. BoA apportioned it to the five pilot woredas and to the concerned departments at the Regional Bureau. The necessary administrative procedures were completed and each Woreda opened an "A" account in the nearest branch of the Commercial Bank of Ethiopia. Taking into account the remaining time for implementation of planned activities (August to Decemeber), the extension plan revised in April had to be revised again in August 2003.
- The planning and implementation of all training activities have been reworked with Dr Elias, the Training Associate of AMAREW, for better outcome.

- The following is a summary report of activities accomplished in the five pilot woredas:
    - 100 kg of three striga resistant varieties of sorghum (in addition to 29 quintals that went through through the research system) and 4 quintals of two varieties of Triticale were introduced to a number of farmers in three pilot woredas.
    - A few quintals of potato, onion and shallot planting materials and seven kilograms of vegetable seeds have been made available to farmers to promote vegetable production in East Belessa and Sekota woredas.
    - Thousands of sweet potato and cassava cuttings were distributed to farmers in Tehuledere and Gubalafto woredas.
    - Several thousands of coffee seedlings, and a smaller number of highland fruit tree seedlings have been distributed in Tehuledere woreda.
    - Molding frames necessary to train farmers in producing fuel saving stoves have been made available to three of the pilot woredas, and 146 women and 25 Development Agents (DAs) in the five pilot woredas were trained in the construction and use of fuel wood-saving stoves.

Figure 5. Training of women on making energy saving cooking stoves for income generation and natural resources protection in Guba Lafto Woreda.

- Sets of materials that would assist in the processing and handling of honey have been made available to two woredas for training farmers in modern beekeeping. As a result, training in the construction and use of improved beehives (using locally available materials) and in handling bee products has so far been given to 99 farmers and 30 DAs.
- Sets of materials that would assist in the production of standard fishing nets have been made available to Tehuledere Woreda (where fish production is important) for training fishermen and women. Training was given to 10 DAs, 49 farmers (19 women and 30 fishermen), and standard fishing nets are now being produced locally, both for own use and for sale.
- Demonstration of simple water harvesting and irrigation system was made on 30 farms (in Lay Gayint Woreda) and 21 DAs were trained in water harvesting technologies (in Tehuledere Woreda).
- Four of the five woredas organized study tours for 18 experts, 8 DAs and 43 farmers.
- Three Farmers' Research and Extension Groups (FREGs) and 3 anti-HIV/AIDS clubs were established in Lay Gayint Woreda.
- 30 farmers and 8 DAs in Lay Gayint woreda were trained in participatory on-farm research and extension.
- 115 farmers in Gubalafto Woreda were given orientation about the new integrated package extension system.
- 54 farmers and 4 DAs were trained in soil and water conservation measures (in East Belessa and Sekota woredas), and other 14 farmers and 2 DAs in joint forest management practices (in Gubalafto woreda).
- 55 farmers and 19 DAs in two woredas were trained in irrigation and horticultural crops production.
- 78 farmers and 13 DAs in three woredas were trained in compost making and utilization.
- 189 farmers and 15 DAs in three woredas were trained in pest assessment and in integrated pest management.
- 39 community animal health agents and DAs were given refresher training in animal health in Sekota Woreda.
- 95 women and 15 DAs in three woredas were trained in poultry production.
- 57 farmers and 14 DAs in three woredas were trained in small ruminants production.
- 147 farmers and 58 DAs in four woredas were trained on the prevention of HIV/AIDS and about family planning.
- 78 women and 16 DAs in four woredas were trained in food habits and nutrition.
- In addition to these, the extension staff of the three woredas participated in the recently held planning workshops and played lead role in defining the on-farm research agenda of the major Research Centers of the ANRS.

Detailed figurative reports of planned activities versus accomplishments and their distributions across the five pilot woredas are presented in Table 3.

Table 3. Figurative reports of planned (P) versus accomplished (A) extension activities in the five pilot woredas (2003)

No	Activities	Unit	Physical plan		Physical plan and accomplishment distribution across woredas									
					Lay Gayint		East Belessa		Sekota		Tehuledere		Gubalafto	
			P	A	P	A	P	A	P	A	P	A	P	A
1	**Technology/information dissemination**													
1.1	Demonstrating improved varieties of													
	Striga resistant sorghum varieties	Qt	1	1					0.5	0.5				
	Triticale	Qt	10	4	4	0			3	2			3	2
	Potato	Qt	35	6	10	0	20	0	5	6				
	Maize	Qt	0.25	0			0.25	0						
	Chick pea	Qt	1.1	0.5			1.1	0.5						
	Sweet potato cuttings	'000	160	160							130	130	30	30
	Cassava cuttings	'000	1	1									1	1
	Shallot	Qt	1	2					1	2				
	Garlic	Qt	1	3					1	3				
	Other vegetables seeds	Kg	8	7			3	0	5	7				
	Coffee seedlings	'000	28	28							28	28		
	Highland fruit tree seedlings (apple, plum)	No.	100	100							100	100		
1.2	Introducing fuel-wood saving stoves	-			√	√	√	√	√	√	√	√	√	√
1.3	Promoting modern bee-keeping	-			√	√					√	√	√	√
1.4	Promoting modern poultry farming using improved breeds	-			√	√	√	√	√	√			√	√
1.5	Establishing Farmers' Research and Extension Groups (FREGs)	No.	2	3	2	3								
1.6	Establishing anti-HIV/AIDS clubs	No.	10	3	10	3								

Table 3 Continued

1.7	Demonstrating simple water harvesting and irrigation systems on selected farms	No	30	30	30	30								
	Demonstration and training materials		√		√	√								
2	**Training on Agriculture and Natural Resources Management**													
	On soil and water conservation													
	Farmers	No.	58	54			20	19	38	35				
	Development Agents	No.	4	4			4	4	-	-				
	On Joint Forest Management													
	Farmers	No.	12	14									12	14
	Development Agents	No.	2	2									2	2
	Demonstration and training materials	-	√	√									√	√
	On Water harvesting techniques													
	Development Agents	No	0	21							0	21		
	On Irrigation													
	Farmers	No.	55	55	30	30	25	25						
	Development Agents	No.	20	19	10	10	10	9						
	Demonstration and training materials	-	√	√	√	√	√	√						

Table 3 Continued

	On horticultural crops production													
	Farmers	No.	55	55	30	30	25	25						
	Development Agents	No.	20	19	10	10	10	9						
	Demonstration and training materials	-	√	√	√	√	√	√						
	On compost making and utilization													
	Farmers	No.	75	78	20	20			25	30	30	28		
	Development Agents	No.	13	13	10	10					3	3		
	On pest assessment and IPM													
	Farmers	No.	159	189			60	90			27	27	72	72
	Development Agents	No.	16	15			13	10			0	2	3	3
	Farmers on minimizing post-harvest losses	No.	20	20	20	20								
	On poultry production													
	Farmers	No.	128	95	30	30	20	20	50	45			28	0
	Development Agents	No.	19	15	10	10	4	4					5	0
	Demonstration and training materials	-	√	√	√	√	√	√	√	√			√	√
	On small ruminants production													
	Farmers	No.	40	57	20	30	20	20					0	7
	Development Agents	No.	14	14	10	10	4	4						
	Training on Beekeeping													
	Farmers	No.	81	99	30	30					51	69		
	Development Agents	No.	30	30	10	10					20	20		
	Demonstration and training materials	-	√	√	√	√					√	√		

Table 3 Continued

	On Fishery													
	Farmers	No.	50	49							50	49		
	Development Agents	No.	14	11							14	11		
	Demonstration and training materials	-	√	√							√	√		
	On marketing of agricultural products													
	Farmers	No.	30	30	30	30								
	Development Agents	No.	10	10	10	10								
	On basics of animal health (refresher)													
	Community animal health agents and DAs	No	32	39					32	39				
	On Integrated Extension Package (farmers)	No	115	115									115	115
	On participatory research and extension													
	Farmers	No.	30	30	30	30								
	Development Agents	No.	10	8	10	8								
	Refresher training for DAS	No	27	27									27	27
3.	**Training on HIV/AIDS, family planning, and home sciences**													
	On HIV/AIDS prevention													
	Farmers	No.	155	147	30	28	35	31	20	19			70	69
	Development Agents	No.	79	58	10	10	15	15	5	5			49	28
	Demonstration and training materials	-	√	√	√	√	√	√	√	√			√	√

Table 3 Continued

	Training on Family Planning													
	Farmers	No.	155	147	30	28	35	31	20	19			70	69
	Development Agents	No.	79	58	10	10	15	15	5	5			49	28
	On food habits and human nutrition													
	Farmers	No.	80	78	30	28	35	35	15	15				
	Development Agents	No.	15	16	10	10			5	6				
	Demonstration and training materials	-	√	√	√	√	√	√	√	√				
	On Fuel wood saving stoves													
	Farmers	No.	133	146	30	28	35	35	15	15	15	30	38	38
	Development Agents	No.	39	25	10	10	15	0	5	6	3	3	6	6
	Demonstration and training materials	-	√	√	√	√	√	√	√	√	√	√	√	√
4.	**Capacity building**													
	Study tour and experience sharing visits													
	Experts	No	31	18	20	11			4	0	5	5	2	12
	Development Agents	No.	17	8	4	0	11	6			2	2		
	Farmers	No.	62	43			8	4	15	0	27	27	2	12
	Transportaion and logistical Support	-	√	√	√	√	√	√	√	√	√	√	√	√
	Enhancing capability for field work	-	√	√	√	√	√	√	√	√	√	√	√	√

Legend: √ designates the planning and implementation of activities and provision of materials that were necessary to conduct the stated extension activity

As regards to monitoring and evaluation, in addition to the planned annual review workshops at woreda and Regional levels, internal monitoring mechanisms (woreda level fortnightly meeting of Desk Heads under the chairmanship of the Office Head, followed by a monthly technical and financial reporting of Woreda Offices to Regional BoA) have been put in place.

4.3.3 Planning for 2004

The five pilot woredas have begun the planning work for 2004. Each Woreda has selected specific number of Peasants' Associations where activities of AMAREW would concentrate on. The process of bottom-up planning with active involvement of communities has already begun in most pilot woredas. They are also reviewing the strengths and weaknesses of their 2003 extension undertakings and creating stronger linkages with the nearby research centers. This linkage has now been strengthened as the BoA experts in the extension pilot woredas played a major role in reviewing the 2003 on-farm research activities of these research centers, and in defining their 2004 research agenda, as also indicated in Section 3.3.7 of this annual Report. The researchers also took lead role in identifying technologies that could be promoted in the pilot extension woredas during 2004. This joint planning and implementation of on-farm research and extension activities by ARARI and BoA experts will further strengthen the institutional linkage at Woreda level.

4.3.4 Region-wide activities

Region-wide activities undertaken during 2003 relate mainly to training and participation in regional meetings and workshops.

Training

- Over 160 experts of the BoA and teachers in the ATVT Colleges were trained in participatory experiential adult learning/teaching methods. Besides, their training needs were assessed.
- 25 Home Agents from BoA and the five pilot extension woredas were trained in HIV/AIDS, Gender, Family Planning and Nutrition, as a follow up of the training on Experiential Adult Learning Techniques. The Extension Advisor and two highly recognized staff from Virginia Tech were involved in this training as resource persons.

Professional Contributions in Regional Meetings and Workshops

During 2003, the Extension Advisor and the Associate attended, upon invitation, and contributed in several regional workshops that relate to extension and research.

- The Extension Advisor and the Associate edited four volumes of the survey results, and attended the workshop organized to review Socio-Economic Survey of 56 Woredas in the Amhara Region and participated in the discussions.
- The Extension Associate chaired some of the sessions of the Workshop organized by ARARI to review the three-year strategic plans of the major research centers in the ANRS.
- The Associate attended two workshops on the evaluation of the extension activities of the Region during 2002 (one in Dessie for moisture deficit woredas and one in Bahir Dar for others).

- The Extension Associate, upon invitation, attended and contributed in a number of other regional workshops such as:
  - Status of Fishery Resources in Lake Tana
  - Client Oriented Research Management in Agriculture
  - Improving marketing in the ANRS
  - The establishment of a Faculty of Agriculture and Environment under Bahir Dar University
  - Awareness levels about HIV/AIDS in the ANRS,
  - Improving the Natural Resource Base and Rural Well Being in the Ethiopian Highlands, organized by ARARI and FAO in Bahir Dar in view of developing proposals to be submitted for the Global Environment Fund , and
  - Research-Extension-Farmer-Advisory Council (REFAC) field visits and meetings of the four major research centers of ARARI.

4.3.5 Other Activities

Compiling Base line data: Relevant information on the food insecure woredas of the ANRS in general and the five pilot extension woredas in particular has been compiled and submitted to the USAID Office in Addis.

Technical Advice: The Extension Advisor took part in the R2D woreda level steering committee meeting. Both the Extension Advisor and the Associate have been giving, whenever requested, technical advice in the areas of agricultural extension to partner agencies notably BoA and ARARI. The Extension Component has been closely working particularly with the extension wing of ARARI to assist in backstopping (technically) on-farm research and extension activities of the institute. Upon request of Bahir Dar University, professional contributions have also been made to the development of curricula for at least two departments of the planned Faculty of Agriculture and Environment. We are encouraging the University to adopt the land-grant model of US universities so that it could play an important role in linking agricultural education, research and extension in the ANRS. In addition to these, during 2003, the Extension Advisor and the Associate attended, upon invitation, and contributed in several regional workshops that relate to extension and research.

4.3.6 Cross-Cutting Issues

HIV/AIDS: Four of the five pilot woredas had organized training in the prevention of HIV/AIDS. This component involved medical experts from the concerned offices. Besides, contacts have been made with Family Health International (FHI) as to how the existing Anti-AIDS Clubs in the five colleges and planned awareness promotion activities of BoA and the formation of anti-aids clubs in many Peasants' Associations in the five extension pilot woredas could be assisted. Concrete plans are yet to be suggested by FHI.

Gender: In all of the five woredas efforts have been made to make sure that women headed households are given priority. In all areas that women are actively involved (e.g. poultry, fuel-wood saving stoves, small ruminants management, etc.) the training and support activities were mainly targeted at women.

Nutrition: Four of the pilot woredas had organized training in family planning, food habits and better nutrition.

4.4 Integration among Project Components and Institutional Linkages

4.4.1. Integration among Project Components

The different components of the project are increasingly integrating their activities. For instance, the revision of the 2003 extension plan in April involved the different components of the project. The extension component assisted in revising plans of activities in the two watersheds. Jointly planned activities in the watershed component are now being implemented. Similarly, the Extension- MED linkage is also being worked out. There is understanding by both components that farmers who have been taking trainings in some technical areas such as fishery, beekeeping and poultry would next year benefit from trainings in such areas as business development and marketing that the MED component could organize. In the meantime the Extension component could arrange tailored training programs in specific fields of interest (e.g. cash crops production) for farmers engaged in MED activities.

As indicated in Section 4.3.3, particularly the research-extension linkage is being strengthened through Woreda level joint planning and implementation arrangements for on-farm research and extension activities for 2004.

4.4.2. Institutional Linkages

A series of discussions were held with BoA and ARARI experts to bridge the existing gaps in the research-extension continuum and to devise a mechanism to functionally link both institutions at Woreda level through joint planning and implementation of USAID/Ethiopia assisted on-farm research and extension activities. The capacity of farmers in demanding services from research and extension (by setting activity agenda), as has just begun in the watersheds, has to be further strengthened in pilot woredas as well through bottom-up and participatory extension planning, implementation and evaluation.

4.5 Relating Performance of the Extension Component to PMP

The work on developing Strategic Objective, Intermediate Result and Activity level indicators and targets for the AMAREW Project in general and for the extension component in particular has been completed and the first draft is being reviewed by USAID-Ethiopia and the implementing agencies notably BoA and ARARI.

The proposed PMP indicators and targets set for the project in general and those of the extension component in particular are yet to be officially accepted by both BoA and USAID/Ethiopia. Besides, owing to some of the difficulties indicated earlier, extension activities of 2003 focused mainly on training. Thus, relating activities undertaken during 2003 to PMP indicators and targets could not be made. But extension plans for 2004 are being developed in a bottom-up and participatory manner and in close collaboration with the research centers. Each of the extension

activities to be planned will be carefully evaluated for their link to USAID/Ethiopia's RHPP SO. Guideline to this end has been developed, and discussions on its use were held with experts in all pilot Woredas. Now, woredas have begun using it to work out their 2004 extension plans.

4.6. Problems Encountered and Measures Taken

As 2003 was the first year of project implementation in the pilot extension woredas, several problems were encountered. The paragraphs below briefly present some of the problems and the measures taken to address them.

Extremely weak research-extension link at woreda level: At Woreda level, functional research and extension linkages were practically inexistent. After a series of discussions with concerned experts of BoA and ARARI, experts have now begun planning their activities jointly. This has been observed in the planning exercises of extension (2003 and part of the 2004 plan) and on-farm research activities (of 2004). The Project has begun forging functional link between researchers of ARARI, extension agents of BoA, and farmers in each of the pilot woredas through joint planning and implementation of on-farm research and extension. As a result, framework for bringing about a paradigm shift in the planning and implementation of on-farm research and extension by functionally linking major stakeholders at woreda level is on the making.

Limited knowledge base: The knowledge base to bring about a rapid and significant increase in production and income of rural households in the food insecure woredas appears limited. The staff members of AMAREW, BoA and ARARI are working hard to expand the menu of options for extension. This requires generating adequate information on technologies both in the production and marketing aspects. Supporting this effort would substantially assist the project to achieve its strategic objectives.

Mindset of some experts and power structure: Though many experts were aware of participatory research and extension methods, experience in applying them on the ground was limited. Making farmers part of the decision process in defining research and extension undertakings was oftentimes challenging to many experts. Presenting study results and extension plans in plain Amharic proved difficult. The mindset of many that they are deliverers of knowledge while farmers are learners seems to have been wide spread. Besides, farmers tend to observe the power structure between themselves and the experts. Thus much needs to be done to change the attitudes of extension workers and researchers to work with farmers as equal partners and to be ready to learn from them. Institutions need also to put in place working mechanisms to this end.

Limited experience to do situation analysis, to be engaged in basic on-farm research and to plan and implement need driven extension activities: In many of the pilot woredas, many of the woreda extension experts are young and inexperienced. Results of the preliminary training needs assessment of BoA experts who attended the training in experiential learning also showed that there were gaps in the understanding of what extension is and the role of BoA experts in situation analysis (identification and definition of problems for research, development planning and policy making), in inventory of technologies, in testing/verification

of technologies, and in popularization and demonstration of technologies. Widespread and highly rated desire for training was shown for building capacity in situation analysis, on-farm technology testing and evaluation. Discussions are underway with the Training Officer as to how we can help build the capacity of BoA experts at Woreda level to do well thought situation analysis of the local agriculture and people's livelihood systems, to identify and define problems and potentials that relate to production and income, to make inventory of technologies/information, to do *ex-ante* technology evaluation, and to conduct on-farm pre-extension trails and then wider scale dissemination. Similarly, training is needed to strengthen the capacity of experts to exercise participatory and need-driven extension planning and implementation.

Balancing between community needs and priorities and Woreda ADO plans: Some experts of BoA want to do things as they are used to, and based on some targets set from higher offices, with little or no balancing act to match these targets with community needs. This has been observed both in Sekota and Gubalafto woredas while planning extension activities in the two watersheds. We need to reflect further as to how this gap could be bridged, and how AMAREW could play advocacy role for communities, particularly in the two watersheds, so that they will be in better position to demand from the extension and research institutions. With this regard, the joint planning workshops of on-farm research and extension activities that have just begun recently would constitute an important platform to enhance linkage and promote accountability and the culture of working together with farmers as equal partners.

Attempt to equate extension with training: There is a widespread tendency to focus on training of DAs and farmers by woreda experts. There is a need to realize that training should be a vehicle for effective technology selection and dissemination and not an end by itself if extension is to have a measurable impact on household production and productivity. Slowly, the message seems to have gone through after several discussions with Woreda Agriculture Office Heads and experts.

Problems related to technology multiplication, timely and adequate availability of input and credit: The multiplication of improved technologies (such as improved breeds of livestock, improved seeds of crops (notably of potato, some cereals and pulses), better agricultural implements, etc.) are yet to be addressed effectively. As a result, many activities will continue to be scaled down owing to lack of adequate materials for wider dissemination. Besides, there exist some missing links in making available the required inputs for new technologies (such as fertilizers and agricultural chemicals), especially at the Woreda level. The new structure has put offices responsible for input supply and the promotion of cooperatives (earlier within the Office of Agriculture) under the Rural Development Office. It appears that the functional linkages with the Office of Agriculture are not yet well built in, at least in the pilot woredas. As a result, issues of input and credit availability, that are critical to wider scale adoption of new technologies, remain problems yet to be addressed at the grass roots level. Extension without putting in place working mechanisms for making technologies, credit and inputs available for farmers would not go beyond creating awareness. This merits serious discussion both at Regional and Woreda levels.

Difficulties to get funds to woreda Agricultural Development Offices: Following new financial regulations, there were some administrative hurdles to get the money to the pilot woredas. The issue was brought to the attention of BoA and BoFED. The latter authorized the woredas to open special accounts, and the allotted funds for the extension activities reached the woredas during the third quarter.

Issues related to fund release and utilization: There was practically no communication with AMAREW when USAID/Ethiopia released the fund to BoA, and when BoA apportioned the fund to the different woredas. Besides, there were no clear directives concerning the flexibilities in fund utilization (e.g. shifting funds from one activity line to others). This made the Project staff unable to respond to some questions that woredas raise in relation to fund utilization and financial reporting. If the administrative wing of AMAREW could play additional role in facilitating the link between USAID and BoA or Woredas with regard to administering financial flows, most of the problems related to delays in financial reporting might be solved.

Poor communication and reporting: Information flow between the Regional offices and Woreda level authorities and experts regarding the project and its objectives and modalities of operation have to be improved. The technical backstopping that Regional experts could deliver to Woreda level experts has not been as much as expected. Besides, despite the reporting system laid down early on, woredas are still weak in reporting technical and financial activities to the Regional Bureau and to the Project Office. Strengthening the follow up by BoA would be necessary so that woredas would timely submit their technical and financial reports. Regular reporting of activities and timely liquidation of funds for intended activities is extremely important to avoid budget release delays (from USAID/Ethiopia to BoA, and from BoA to Woreda Offices). To facilitate and accelerate this process, each of the pilot woredas has now named specific experts as focal persons of AMAREW Project. The focal persons will be responsible to coordinate and report all project activities, and problems related to reporting are expected to be minimized.

4.7. Conclusion

2003 has indeed been the very first year to plan and implement extension activities in the pilot woredas. Owing to some of the constraints indicated earlier, the plan had to be revised, and actual implementation of field level activities began in August. As the planting season was over, much of the activities implemented focused on training. Nevertheless, almost all of the planned activities have been accomplished. Besides, a number of works have been conducted to pave the way for effective extension work in 2004 by forging a functional link between research and extension at the Woreda level, and by assisting experts to be engaged in participatory and need driven extension planning and implementation. Experts are being encouraged to plan realistically (taking into account their capacity to deliver) and to timely submit technical and financial reports to the Regional BoA and to AMAREW. Some woredas have now begun drawing their 2004 action plans accordingly. We therefore expect better accomplishment in 2004 as better integration across project components on one hand and Woreda level institutional links between research and extension institutions on the other are taking hold.

5. Integrated Watershed Management Component

5.1 Purpose

The watershed management component of the AMAREW project aims at serving as a site-specific integration model of research, extension and micro-enterprise activities of the project. The underlying principle is to engage in testing a wide range of interventions to provide the BoA and other regional institutions with appropriate land use planning tools and proven techniques for sustainable natural resources development and rehabilitation of catchments in the food insecure woredas of the ANRS. Sustainable land use development is considered as an ultimate goal which will be achieved through a series of policy and pilot technical interventions with emphasis on participatory research, extension, and management practices in pilot micro-catchment sites.

5.2 Major tasks of the component

The watershed management component of the AMAREW project plans to accomplish the following key tasks:

- **Establishment of a multi-disciplinary Integrated Watershed Development Management Team (IWDMT)**
  - Support and oversee policy reforms, pilot activities, and community development programs
  - Seek to change the extension paradigm to focus on participatory planning and management
- **Strengthening Community Level Management**
  - Support the establishment and reinforcement of community organizations in the planning and managing activities
  - Establishment of Community Watershed Management Organizations (CWMOs) to serve as the responsible structure to maintain/sustain development after outside assistance is completed
- **Watershed Planning and Management**
  - Upgrading the skills of farmers and extension personnel to organize and replicate new community micro-catchment management activities after the initial pilot phase is over
  - In collaboration with MED, conduct pilot studies to support the creation of off-farm income generation activities
  - Through participatory planning and management activities, carry out soil and water conservation supported by food aid from R2D

5.3 Year 2003 targets, expected outputs and performances

5.3.1 Establishment of a multi-disciplinary Integrated Watershed Development and Management Team (IWDMT)

Expected Outcome

- Agencies begin to think of holistic management in the watersheds
- Agricultural and environmental technologies demonstrated, tried, and adopted by rural households in the focus areas.
- Improved community natural resources management and environmental rehabilitation in the pilot watershed areas, as well as other appropriate sites in the focus area.

Performance

- Working from the suggestion of the representatives of partner institutions that attended the preliminary meetings of this team, the agency heads of BoA, ARARI, and EPLAUA were asked to write official letters endorsing the idea of a regional IWDMT, and naming permanent representatives to it.
- Four regular meetings have been held. The IWDMT has been brought up-to-date on pilot watershed activities; consequently it helped plan the October workshop and the December on-the-ground planning.
- Through the IWDMT, our project is taking the initiative to bring together other bilateral donor agencies (SIDA, WFP, GTZ, EU) working with BoA in areas of watershed management in areas of joint guideline development, policy review, and mutual cooperation and developing methodology for future replication in the region

5.3.2 Establishing and empowering Community Watershed Management Organizations (CWMOs)

Expected Outcome

- Some form of local organizations which will be bestowed with the responsibility deciding and executing the integrated watershed management is organized and will become active.
- Improved community natural resources management and environmental rehabilitation in the pilot watershed areas

Performance

- Two CWMOs (one each in Yeku and Lenche Dima) have been organized and are functioning. Under the umbrella of the watershed organization there are four watershed development committees: namely, Natural resources management, Agricultural improvement, Social development, and Business development. Each CWMO is composed of 32-farmer representatives with a 1:1 male to female ratio.
- Initial training was given in June to core community group members on Community Organization Leadership Towards Action (COLTA). This course was held in Mersa and conducted by the Lutheran World Federation. A total of 19 people were trained, including five DAs, three PA leaders, and at least five farmers from each of the two pilot catchments. This training focused on the causes of poverty, participatory techniques, and community self-reliance and organizing as a way to solve problems.

- Follow-up COLTA training was given during October to the newly elected CWMO members.
- With the collaboration of local BoA offices, we advertised in Sekota and Woldiya for a Soil and Water Conservation Agent and a Home Agent in each site. The hiring of these agents was postponed mainly due to the budget cut, and is currently on hold.

5.3.3 Watershed plans collaboratively drafted and implementation begun

Expected Outcome

- Watershed management plans developed and implementation begun.
- Community buy-in in natural resource management.
- Improved community natural resources management and environmental rehabilitation in the pilot watershed areas, as well as other appropriate sites in the focus area.

Performance

- The community developed a detailed watershed management work plan, clearly identifying the priority problems of the communities in both watersheds including required solutions and implementation schedule, during February.
- The following illustrative list, developed by a community group in Lenche Dima, gives the various problems in priority order. Solutions and corresponding interventions (identified in detail by area within the catchment) were also prioritized, but are not presented here.

    - Water, for both human and livestock
    - Food shortage
    - Crop yield reduction
    - Deforestation
    - Erratic rain, moisture stress
    - Soil erosion
    - Lack of access, no feeder road
    - Floods in the gullies
    - Livestock feed shortage
    - Health problems for both human and livestock
    - Low literacy level
    - Diseases and insect pests
    - Weed problem
    - Crop damage and livestock loss due to wild animals
    - Land shortage
    - Lack of oxen
    - Low productivity and production of crops and animals
    - Unstable markets (prices fall when crops are good)
    - High population pressure

- Soil and water conservation (biological and physical) measures were the main community-selected watershed interventions. Community members said that most of the work in the past was ineffective, mainly due to the poor selection and implementation of the conservation structures in the watershed. DAs and community members seek to be trained on the selection and implementation of appropriate conservation methods.

- Representatives from Yeku presented the community plan during the R2D woreda Steering Committee meeting in Sekota in mid-April, and those from Lenche Dima presented in Woldiya in early April. (All the AMAREW components were present at the Woldiya meeting and gave clarification on issues related to their respective intervention areas.) All AMAREW components also met with local farmers during June to discuss how research, extension, and micro-enterprise development could be involved in the catchments.
- Implementation of the community-developed management plans has begun as shown on Table 4 below.
- Area closure, mainly for fodder production, was the major implementation in both catchments. Both of these closures have become social closures, which require no paid guards or fences, but only a community agreement that animal grazing and vegetation removal will not be allowed. The closure in Yeku is particularly impressive, with some grasses a meter tall and all grasses producing seed. Regional and national officials visited both areas in October.

Figure 6. The rehabilitated Area Closure of the Yeku Watershed being visited by Regional and USAID officials and farmers

- The reason we have enjoyed the success that we have is not due to our process, but can be credited to our attitude. The process we followed consisted of sitting down with the communities, asking them what they needed and how much time they could devote to physical work, and with them developing a schedule that fit the available person-days to the work. The community was treated as an equal partner in the process, and their needs and constraints informed the planning.

Table 4. Yeku and Lenche Dima pilot watersheds Year 2003 activity performance

Activity description	Unit	Yeku		Lenche Dima	
		Target	Achievement	Target	Achievement
Soil & Water Conservation					
Stone-faced soil Bund	km			10	7
Stone bund	km	10	13.8	20	
Vegetative fencing	km			20	3
Hillside Terracing	km	20	18.9	30	12.5
Cut-off drain	km	2		4	3
Check-dam construction	km	1	0.83	2	3
Check dam maintenance	m	300		0.3	
Agro forestry					
Pitting	no	50000	20,000	60,000	36,665
Micro basin/Trench construction	no	10000	6,968	10,000	6560
Seedling planting	no	60000	18,271	70000	38600
Closed area management	ha	10	12	10	10.5
Gully Revegtation	ha	5		5	3
Manure collection	M3	100		100	
Weeding	No.	10,000	18,271	10,000	35,000
Infrastructure					
Farm pond construction	m3				
Rehabilitation of water supply	M			2,080	2,080
Farmers and DAs Training					
Improved stove and food and nutrition	No	22	23	10	10
HIV/AIDS and family planning	No	27	27		
Poultry production	No	47	45	20	20
DAs and animal health technicians	No	32	39		
Farmers training in animal husbandry	No	20	20	65	94
Farmers training on apiculture	No			20	17
Integrated Pest Management				49	48
Natural Resources management/ Soil and water conservation	No	38	35	13	13
Leadership and empowerment training to Watershed Association members	No	32	32	32	27
Homestead development					
Goat restocking	House-hold	20	20	65	94
Provision of seeds of trees and forage species.	Kg	3.5	3.5	7.8	7.8

5.4 Other developments

5.4.1 EPLAUA Activities

For the regional office of EPLAUA, land administration and registration are major responsibilities that relate to the AMAREW Project. Specifically, EPLAUA's activities include developing directives and legislations for implementation of land law, cadastral surveying and land registration, certifying land users for their land holdings, and designing and testing approaches for a land

administration system. For the two pilot watersheds, EPLAUA will follow a standard, step-by-step procedure that leads to issuing land use certificates for a kebele.

Major activities conducted in year 2003 by woreda EPLAUA offices are:

- **Training of farmers, DAs, Experts and other stakeholders**
  - Different stakeholders at woreda level including Office of Agriculture, Justice office, Court, Police, administration and development agents were selected and trained
  - Presentations on the land administration and use guidelines were conducted, referring Proclamation No. 46/96
  - Farmer representatives from different kebeles adjoining the pilot watershed were selected and trained
- **Organizing land administration committees**
  - A general meeting for all watershed and nearby farmers was organized. Detailed discussions included the need to establish a land administration system, the benefit that can be obtained from the system, and the responsibilities of the land administration and use committee.
  - Following this meeting, the general assembly selected members of the land administration committee for each watershed
- **Land-holding registration**
  - The land-holding registration for Yeku watershed is mostly completed, while Lenche Dima's needs more time.

Thus, the respective woreda offices have done most of the preparatory work that leads to the provision of a first-stage land certificate within a short period of time, given the late release of the budget for year 2003. The principal remaining tasks are the land surveys that result in legal descriptions of each farmer's plot, and the issuing of final land use certificates.

5.4.2 October 2003 workshop

- This workshop was originally envisaged for the fall of 2002. The original concept was to bring together all partner institutions involved in the rehabilitation of the pilot watersheds, to review ongoing activities, and to design strategies to lead to integrated and effective community-based planning and activity implementation.
- The July budget cut forced a change. The emphasis shifted from a workshop about just the watershed component, to one that emphasized project integration and partner involvement in the two catchments. Overall focus was maintained on the catchments, but all factors related to AMAREW and its partners were included in the discussions.
- The workshop was held in Woldiya on 21 and 22 October, 2003. Regional and woreda-level participants including BoA, ARARI, EPLAUA, Rural Development Bureau, R2D, and ACSI, as well as AMAREW senior staff and Dr. Norman Uphoff and the two graduate students from Cornell participated.
- Outputs from the workshop included recommendations on research-extension linkages and coordination, ways to fully incorporate regional financial institutions, and procedures for inter-agency collaboration within the pilot watersheds and at the project level. Workshop proceeding is being prepared.

5.4.3 Short-term technical assistance on Participatory Planning and Community Organization

- A detailed terms of reference for a consultant was jointly worked out with partners (BoA and IWDMT) and forwarded to Cornell. A consultant was identified; however, as a result of the budget reduction, this activity and all other STTA is on hold.

5.4.4 Monitoring of run-off and water storage within pilot catchments

- The two Cornell graduate students working in the Project watersheds, Amy Collick and Oloro McHugh, have begun their Ph.D. research work in the Yeku and Lenche Dima watersheds, respectively.
- Rainfall, run-off, and water storage measurements were collected in both watersheds throughout the rainy season. Good working relations between the graduate students and ARARI research centers and the graduate students and the communities are being maintained.
- A synopsis of the work of these two students is attached at the end of this section as Annex WS1.

5.4.5 Year 2004 work plan preparation

- The 2004 annual watershed activity plan was developed jointly by all stakeholders as recommended during the October workshop. Participants in work plan development included representatives from Regional and Woreda line bureaus, researchers, AMAREW staff, Watershed Association members, Peasant Association leaders, R2D experts and Cornell staff.

5.5 Significant Problems Encountered

5.5.1 Grain Resource

At the beginning of the work with the community, the understanding of the AMAREW Project staff was that the necessary food resource required for the implementation of the identified interventions would come from R2D, in the required amount. . However, towards the end of the planning with the community, we were told that the R2D food resource was based on the national Food Appeal system, which has severe restrictions. Trying to understand this system and how it worked delayed start-up, and adversely affected the relationship with the communities and woreda officials.

An additional issue (that could be a future problem) concerns grain distribution to support soil and conservation work. This issue is related to replicability, and can be expressed, as the question "is the R2D-style of food distribution system going to be in place wherever this approach is implemented?" Such a food-distribution system is probably not necessary. Once a community is organized, they have indicated that they will continue to work. As an initial incentive, grain distribution appears necessary. Food distribution undoubtedly distorts local and regional markets, and questioning its use is legitimate, although it is an integral part of both AMAREW and R2D.

5.5.2 Budgets for Line Agencies

The major responsibility for the watershed development implementation falls on the shoulders of the two-woreda BoA offices. An initial issue regularly raised by BoA administrators was the lack of budget to cover even the low level of start-up support they provided. The practice of paying per diem for any field activity means that if money is not available to be paid to a woreda expert, the expert does not go to the field. The budget process that AMAREW followed in December raised expectations that financial needs would quickly be covered. A major delay was caused by the need for the regional offices to account for previous USAID allocations before receiving money earmarked to support AMAREW. Due to this and other problems, this year's allocation from USAID did not reach Bahir Dar until July, did not reach BoA woreda offices until a month later, and did not reach one of the regional partners (EPLAUA) until October.

The budget for watershed development is mainly channeled through BoA. There are, however, other activities which may be priority problems of the community such as water development that is not the mandate of BoA, rather that of the water desk under the Rural Development Office. Similarly there are stakeholders, such as the Cooperatives Promotion Bureau, which do not have USAID's financial support through the AMAREW Project to take part in the watershed development activities.

5.5.3 Capacity

BoA is one of the core leading institutions in the region directly involved in the realization of the region's food security strategy. Various bilateral donor agencies including USAID have identified BoA as key implementing partner. At some woredas (e.g. Gubalafto and Sekota,) there could be as many as 3-4 donor agencies (EU, WFP, USAID, SNV, etc) fully dependent on woreda offices of Agriculture as implementer. With the present level of staffing and high level of staff turn-over, the ability of woreda offices to take full charge of planned activities has become a concern.

5.6 Action Taken to Solve Problems

5.6.1 Grain

A quick solution to this problem was not found. In Sekota, local woreda officials in charge of the grain were willing to negotiate around the strict rules governing Employment Generation Scheme (EGS) and supplied us with additional grain, but not enough grain was allowed to be included in the Appeal Figure to meet the needs of Yeku watershed rehabilitation and the food needs of the remainder of the woreda. In Gubalafto, woreda officials wanted to divert EGS grain to road construction, but allowed us to have our original allotment within the watershed. R2D agreed late in the second quarter to provide us with all the grain needed for full implementation of the community-developed plans.

Eric Brainich, the new R2D CoP, was able to resolve this issue by obtaining permission from the Food for Peace office (who controls the grain, and controls that portion of the R2D contract) to use R2D grain as FFW. His effort appears to have put this issue to rest, and will inestimably enhance project advancement in the watersheds.

5.6.2 Capacity

The establishment of the IWDMT was found to be a key solution to this problem. Agency representatives on the IWDMT understand the participatory approach and enthusiastically support it. This understanding and support was not arrived at overnight, but through working and traveling together over the past six months. In addition, conducting joint workshops by bringing all stakeholders was found to be helpful. Presently there is a good collaborative activity planning monitoring and evaluation efforts being jointly undertaken by BoA and AMAREW.

Annex WS1 – Synopsis of Graduate Students Research

Two Cornell graduate students, Amy Collick and Oloro McHugh, have been in Yeku and Lenche Dima, respectively, since March. They are pursuing research toward the Ph.D. degree and in support of overall AMAREW Project goals. Their activities are described here, first Ms. Amy Collick's and then Mr. Oloro McHugh's.

Yeku Research - (Ms Amy Collick)

Current research studies at Yeku include on-farm trials of different crops under varying fertilizer application, tied-ridging tillage practices, pesticide application, GPS mapping of watershed, and hydrological assessment. Community-based, participatory research concerns the BoA-promoted water-harvesting structures, measurement and estimation of runoff, and collection of rainfall data.

One of the unexpected problems encountered the first year was the disappearance of the maps that had been completed during the initial studies five years ago. In Yeku, a base map was developed using GPS data. Waypoints were collected with a Garmin GPS72 unit, including the watershed boundary, waterways, roadways, various land use types, and testing sites. Collection of waypoints will continue throughout the life of the project. The waypoints were then converted to map units using ArcView GIS©, in collaboration with the regional EPLAUA office.

A significant amount of data has been collected to support the hydrological assessment. These data include a daily rainfall record, rainfall distribution and intensity, temperature, pan evaporation, daily and storm event stream runoff, and basic soil infiltration. These were collected during the 2003 rainy season, and also will be collected during 2004.

Plans for future research have been made through discussions with both the Sekota Agriculture Research Center and with COOPI and government water bureaus. Research planned with the Sekota ARC includes collection of community hydrology data in order to compare with actual measurements, household water use and potential for homestead plantings, data collection during the second consecutive rainy season, and extension of the water-harvesting structure study. Research planned in collaboration with COOPI and government water bureaus is an investigation into rehabilitation of inactive water pumps in Yeku.

Assistance this year came from, among others: the communities of Yeku and the and surrounding area; Weleh Elementary School; Temechey Sisay, Eshato, and the Sekota BOA;

the Sekota Agricultural Research Center; R2D staff in Sekota; and Tammo Steenhuis, Brian Richards, and Betty Czarniecki from Cornell University.

Lenche Dima Research - (Mr. Oloro McHugh)

Research in Lenche Dima watershed is aimed at supporting AMAREW project activities by: finding and testing solutions to the problems of erratic rain/short-term drought, low food production, high soil erosion, and the shortage of livestock and domestic water shortage; collecting baseline data on the watershed for planning and Project impact assessment; and monitoring watershed project activities and assessing their impacts. The research is divided into four main studies: hydrologic assessment of the watershed; experiments on water harvesting and improved tillage; land degradation assessment and monitoring of effectiveness of project activities on erosion control; and a farmer survey. As with Yeku, the research will be carried out between March 2003 and November 2004.

The objectives of the hydrologic assessment are to collect baseline hydrologic data, identify and compare water development options, and monitor and predict impacts of various activities on watershed hydrology. Methods employed are watershed water accounting (rainfall, evapotransporation, and other depletive uses, stream outflows, and change in storage/infiltration), watershed land use and soil maps, and integration of these into GIS and a water balance model.

Rainfall measurement in 2003 was accomplished by establishing a network of rain gauges in the watershed, with five students from watershed villages recording daily rainfall and one automatic rain gauge recording at 10-minute intervals. The resulting records demonstrated a high temporal and spatial variation. The temporal variation is the most easily explained. During the *belg* (April/May) rain, 86% of rainfall came from three events during a six-day period. During the k*remt* (July-September) rain, 60% of the rain fell during the first three weeks of August.

Experiments in in-field water harvesting and tillage are designed to identify and test appropriate techniques that reduce crop water stress during periods of decreased rainfall, increase crop productivity, reduce cropland soil erosion, and reduce runoff from croplands. In addition, farmers learn from demonstration trials, and farmers test new techniques on their farms. A controlled Experiment was carried out during the latest cropping season. This experiment was a randomized complete block design with 3 replications and 3 water harvesting (tied-ridges, open ridges/ supplemental irrigation, and control) and 2 tillage treatments (deep tillage and control). Farmer trials were also established, with at least 12 farmers testing deep tillage and water harvesting techniques on half of one of their plots. Parameters measured include plot water balance (rainfall, evapotranspiration, soil moisture, infiltration, runoff), soil erosion rate, soil compaction/ bulk density, and plant productivity (grain, biomass) and root growth.

Studies on land degradation and erosion control have as their objectives to collect baseline data on the current extent and degree of land degradation in the catchment, to measure and compare runoff and erosion for different land uses, to monitor and assess impacts of watershed activities on erosion control, and to predict future land condition for different development scenarios. Methods include collecting hydrologic data and developing a soil

map, measurement of sediment outflow, developing current and past land cover/use maps (using aerial photos, satellite imagery, and ground-truthing), integration into a GIS and erosion model, determination of gully density and gully expansion, and direct measurement of hillside and cropland erosion rates. Hillside erosion has been measure on paired plots, differing in plant cover (acacia forest versus grassland with scattered shrubs). Measurements have included runoff, soil loss, soil infiltration rate, and soil moisture.

Planning for a farmer survey is mostly complete. This survey will consist of formal and informal farmer interviews, and will be conducted during the upcoming dry season. It will provide relevant social and economic data to complement the biophysical data collected in the above three studies.

Collaborators in Ethiopia for the initial phase of the Lenche Dima work include ARARI in Sirinka and Bahir Dar, the Gublafto woreda office of the BoA in Woldiya, the local BoA DA in Hara, and the R2D staff in Woldiya. Both students are supported entirely by non-AMAREW funds.

6. Training Component

6.1 Introduction

The partner institutions working with the AMAREW project operate on large area of land having immense challenges of agricultural development. However, these organizations are not having the required qualified professional staff in sufficient number to address these challenges. Furthermore, as a result of the decentralization process, woreda agriculture development offices are made to shoulder the power and responsibility of deciding on all developmental activities that should be carried out in the woredas without having the required manpower and capacity the job seeks. In addition to this, new technologies, which require new knowledge and skill, are being introduced into the farming community through the various extension interventions.

Due to this, building the analytical, operational and management capacity of partner institutions within the context of reformed and strengthened research and extension services through the identification of long-term training, short-term training, educational or motivational study tours were considered as key areas requiring the project support. Hence, the 2003 training plan was designed taking the above assumption into consideration.

6.2 Long-term degree training

Degree training of selected ANRS professionals is considered as one of the principal means for building human and institutional capacity and facilitating the research/extension paradigm shift. In line with this, the project together with the partner institutions identified key areas, that need to be strengthened through upgrading academic qualification of their staff. In this regard, plan was made to train a total of 6 researchers of ARARI (4 for M.S. and 2 for Ph.D.) and a total of 14 staff members of Bureau of Agriculture (6 for M.S. and 8 woreda level extension workers for B.S. degree). Based on this plan, 3 researchers from ARARI and 2 woreda level extension workers who passed the University entrance examinations were sent to Alemaya University to attend M.S. degree

classes. Furthermore, agreement was made with the University so that the students are advised to do their M.S. research on project focus areas and issues.

Furthermore, a different tailor-made arrangement was made to up-grade the academic qualification of woreda level extension workers. In the arrangement, it was planned to make extension workers spend most of the year in their work places and attend classes in summer. Through this program, in 2003, a total of ten staff members of Bureau of Agriculture (BoA) having diploma qualification were sent to Mekelle and Alemaya Universities to attend summer B.S. degree programs. In addition three staff members of ARARI were made to join the regular program to attend B.S. degree classes. The names, discipline and institutional distributions and trainees are listed in Table 5.

6.3 Short-term in service training

These courses and training are targeted to equip employees of partner institutions and the ultimate beneficiaries of the project, the farmers, with the required Knowledge, Skill and Attitude (KSA) to attain the much sought household production and productivity increase. These training programs were planned to be organized at three levels. First to impart practical skill, which will help researchers to be involved in client-oriented on-farmer research. Second, to create a forum whereby researchers pass on information to extension workers so that they in turn pass it on to grassroots Development Agents and to farmers. The third and the major one is the training organized to equip farmers with the required KSA which would make them utilize the technologies made available to them through the different extension interventions. Although these trainings may seem to be separate and isolated, they have complementarities and all are targeted to one goal i.e. improving the production and productivity of the farmer. The training planned and executed under the different categories are as given below:

6.3.1 Upgrading researchers' skills

With regard to this category of training, specific topics such as; Participatory on farm research and data analysis, Tissue culture, Laboratory techniques and instrumentation, Farm machinery design and testing, Poultry husbandry, Bee keeping, Water management, Food science, Dryland farming, Integrated soil and fertility management and Strategic Research planning were planned for the year. However, from among these only Strategic Research planning was executed. The others were postponed due to budget reduction.

Table 5. List of staff members of partner institutions attending B.S. and M.S. degree courses at Alemaya and Mekelle Universities.

No.	Name of trainee	Partner institution	Degree sought	Field of study	Training University
1	Demrew Wesenyeleh	BoA	M.S.	Agricultural Extension	Alemaya University
2	Getaneh Wubalem	BoA	M.S.	Agricultural Economics	Alemaya University
3	Bitew Genet	ARARI	M.S.	Soil and Water Cons. Engineering	Alemaya University
4	Yonas Girma	ARARI	M.S.	Irrigation Engineering	Alemaya University
5	Zewdu Birhane	ARARI	M.S.	Agricultural Economics	Alemaya University
6	Tesfaye Setegn	BoA	B.S.	Land Res. Mgt. and Environ. Protection	Mekelle University
7	Aderagew Abohay	BoA	B.S.	Dry land Crop Sciences	Mekelle University
8	Kokeb Bogale	BoA	B.S.	Land Res. Mgt. and Environ. Protection	Mekelle University
9	Misganaw Teshome	BoA	B.S.	Dry Land Crop Sciences	Mekelle University
10	Demere Hailu	BoA	B.S.	Land Res. Mgt. and Environ. Protection	Mekelle University
11	Aymiro Yhyess	BoA	B.S	Animal and Range Sciences	Mekelle University
12	Lackech Mitiku	BoA	B.S	Land Res. Mgt. and Environ. Protection	Mekelle University
13	Mekuria Yimer	BoA	B.S	Dry land Crop Sciences	Mekelle University
14	Sitotaw Taffese	BoA	B.S	Animal Sciences	Alemaya University
15	Mohammed Hissein	BoA	B.S	Animal Sciences	Alemaya University
16	Wolelaw Endale	ARARI	B.S	Mechanical Engineering	Bahir Dar University
17	Dilnesa Ewnetu	ARARI	B.S	Mechanical Engineering	Bahir Dar University
18	Tefera Mokennen	ARARI	B.S	Animal Sciences	Mekelle University

The strategic research planning training was conducted to help researchers create clear direction and orientation of their research so that it helps development of appropriate technologies. In that training, 134 researchers were trained for one week and following the training they went to their respective research centers and developed a strategic research plan, which is supposed to guide the research direction of the respective research centers of ARARI for the coming three years.

6.3.2 Researchers giving skill training to extension workers

The economic and social impacts of a new knowledge and technology are realized, however, only with its adaptation and utilization. In a similar token, technologies developed by the research centers can only attain the targeted purpose if they are communicated and made known to the end users. One way of doing this is communicating the information to extension workers. As a result, training of extension workers by researchers about newly developed technologies and clarifying gaps on the already existing technologies will help extension agents to update themselves and to be motivated to disseminate the technologies. In line with this, one training session by Adet and two training programs by Sirinka Agricultural Research Centers were organized for extension workers. Table 6 lists training offered during the year. The most important thing to note here is the follow-up training given by the trainees after going back to their work place or community. For example, women farmers trained on potato based food preparation by Adet Agricultural Research Center went to their localities and trained fifteen women farmers from their community and displayed to them the different potato based food preparations they have prepared as a result of the training. In the traditional potato growing areas, potato is used to prepare one or two dishes only. The training helped them to learn new potato based dishes as well as to avoid wastage that usually occurs during harvest time.

6.3.3 Up-grading skills of development workers and farmers

Different extension interventions were planned in 2003 to increase production and productivity at household level in the five pilot extension woredas. To complement the planned extension interventions, farmers were required to be equipped with the knowledge and skill, which will help them practice the planned extension interventions. Moreover, in order to help them impart the required knowledge and skill to farmers, development workers in turn need to be educated about the technologies. In line with this, all the five pilot woredas planned skill-upgrading training to farmers and extension workers on diverse areas of agriculture, nutrition and HIV/AIDS, which were, mainly, consistent with the planned extension interventions and which were intended to compliment them.

Figure 7. Regional BoA Expert giving training on fishing gear technology to DAs and fishermen /women of Tehuledere Woreda.

From among the planned training for year 2003, the training offered by the five pilot extension woredas are summarized in Table 7.

Table 6. Tailor made short courses organized by ARARI research centers for extension workers and farmers.

No.	Title or topics	Organizer	Participants		Participating woredas
			Extension workers/ home agents	Farmers	
1.	On-farm research and extension intervention options	Sirinka Agric. Research Center	55		Tehuledere, Delanta, Tenta
2.	Recommended technologies , seed multiplication and diffusion	Sirinka Agric. Research Center	28	247	Kobo,Tehuledere,Delanta,Tenta
3.	Post-harvest potato handling and preparation of potato based dishes.	Adet Agric. Research Center	5*	15*	Lay Gayint, Simada
		Total	**88**	**262**	

Note: *Indicates number of female participants

Table 7. Number and type of participants in the different catagories of training in the five pilot extension woredas

No.	Catagory of training	Extension Workers	Farmers		Total
			Female	Male	
1.	Crop production and protection	34		292	326
2.	Livestock husbandry	69	79	250	398
3.	Natural resources management	50	146	142	338
4.	Nutrition, HIV/AIDS and family planning	74	86	116	276
5.	Marketing and extension methodologies	45	15	160	220
Total		**272**	**326**	**960**	**1558**

As can be seen from Table 7, most training was given in livestock husbandry. This was caused due the late arrival of the budget which made most of the crop related extension interventions to be suspended. The encouraging thing that is worth noting here is, some of the training activities have already started to bring impact. For example, farmers who were trained on bee keeping in Tehuledere woreda were able to construct their own improved beehive (the transitional beehive) during the training and, as a result, they were able to double the honey yield they were getting from the traditional beehives.

6.3.4 Educational or motivational tours

Elsewhere in the country as well as out side, different successful traditional as well as improved technologies or successful community organizations exist. These technologies and community organizations have helped the practitioners to tackle different aspects of agricultural problems. Learning from experiences of such countries or communities is a short cut method to solve the problems of an area. Furthermore, it has also a great motivational effect to mobilize a community for action. Most of the people in our project areas have faced different natural calamities and these have made them to be risk averters and have become reluctant to participate in development interventions. This kind of mindset is not only limited to the community, in fact, development actors working in these areas seem to run out of ideas and motivation.

With this background, in-country and outside country, educational and motivational study tours were planned for researchers of ARARI , Woreda Agriculture Office Experts, Development Agents and Farmers of the pilot extension wordas. In 2003, the following were executed:

- Within-and-outside the Region, study tours were planned for extension workers and farmers of the five pilot extension woredas. Out of the five woredas, East Belessa, Lay Gayint, Tehuledere and Guba Lafto were successful in implementing the tour. As a result, six Woreda Agricultural Office Experts and four farmers of East Belessa traveled to Kobbo, Dawa Chefa and Meket woredas and visited successful Integrated Extension Package activities, farmer-managed small-scale irrigation schemes and natural resource interventions. Twenty Lay Gayint Woreda multidisciplinary Agricultural Office Experts made a comprehensive technical as a well as organizational technology shopping tour and visited different institutions in the Central and Southern part of the country. Similarly, 27 farmers, two Development Workers and five woreda agricultural office experts from Tehuledere woreda traveled to Woldiya woreda and visited Peasant Associations practicing FFS/IPM technologies and formed the FFS/IPM group after returning home from the tour. Sekota participants have postponed the planned tour due to workload and inability to make the required arrangement and organization on time. The encouraging thing done by all woredas regarding these study tours is that, after returning from the tour, all have documented their experience and have clearly designed strategies that would help them put into action what they have learned from the tour.

- With the guidance and participation of AMAREW senior staff, nine researchers representing Sirinka and Sekota Agricultural Research Centers and from ARARI HQs made an educational study tour to North Wello, South Gondar and Tigray. The group visited different successful natural resource activities carried out in these places. As a result

of the tour they produced a document, which described and proposed actions in ANRS for a better natural resources management.

- Eleven researchers representing Adet, Sirinka, Sekota, Sheno, Kombolcha and Bahir Dar Rural technology research centers and ARARI Head Quarters were sent to India for technology shopping and experience sharing visit. During the tour they visited in and around three Indian Central Research Institutes working on Dryland Agriculture, Agricultural Implements, and Soil and Water Conservation. Furthermore, they have also visited the International Crop Research Institute for the Semi-Arid Tropics (ICRISAT). As a result they have come-up with technologies and ideas that could be adopted in the ANRS. After presenting the results of the visit to researchers and policy makers and getting their opinion, implementation action plan is expected to be developed.

6.4 Problems encountered and measures taken

Though the woreda experts made plans to organize different kinds of training to farmers and DAs, however, these woredas do not have the qualified resource persons to offer the planned training. To solve these problems, the planned training was summarized and submitted to the Bureau of Agriculture experts. Nevertheless, limited number of experts have traveled to the woredas and were involved in delivering the planned training. Much is needed to be done to encourage BoA experts to participate as resource persons in the woreda training.

Besides, similar training given in the five pilot woredas were different in their depth and standard. This calls for the need for standardized technical training manuals. There is a plan to prepare such manuals in the coming year.

7. Micro-Enterprise Development Component

7.1. Introduction

The specific objective of the MED component is to have a measurable impact on the growth and diversification of rural household cash income through activities concentrating on micro-enterprise development. ACSI and ReMSEDA (now MSEIDB, Micro and Small Enterprises and Industries Development Bureau) are the principal implementers while ACDI-VOCA is the US partner. The Micro-enterprise Development component was planned to be implemented in Guba Lafto, Tehuledere, Lay Gaynt, Belessa, Sekota and Kalu woredas.

The sections below report on the activities of the MED Component during 2003. The report is organized under three major sections. The first section presents a narrative description of planned activities while the second one reports on accomplished activities. The third section briefly describes some of the problems observed during implementation and measures taken to address them. Further efforts to addressing these problems will certainly contribute to smooth implementation of project activities in the future.

7.2. Planned Activities for 2003

The major activities planned to be conducted during 2003 included:

- establishing working relationships with the two primary partner institutions of the MED component, ReMSEDA (now MSEIDB)and ACSI;
- fill the remaining positions on the Team (MED Associate, MF Officer, Training Facilitator);
- resolving the issues that halted the implementation of ACSI's Management Information System;
- re-drafting the work plan into a more structured and practical document, with careful attention to the objectives of the project and the expected outcomes of USAID;
- discussing the work plan with partner institutions and with USAID;
- implementing the planned activities;
- conducting a study tour during the fourth quarter (barring budgetary restrictions) for BDS & MF practitioners, as well as other ANRS partners interested in observing model Ethiopian business organizations; and
- integrating and coordinating MED activities with the other AMAREW project components.

7.3. Accomplishments

7.3.1 Team Formation and Institutional Linkage

MED Team Formation: The MED advisor joined the project in March 2003, and the MED Associate joined the team in July 2003 and played important role in enhancing the institutional linkage.

Institutional Linkage: As the primary objective of the AMAREW Project is to establish a community-based paradigm shift within the ANRS for the development of strong, long-term partnerships among collaborating partner institutions, the MED component has spent significant effort during 2003 towards this goal. Accordingly, MED has established and defined practical working relationships with the following partner and cooperating institutions

- ACSI, ReMSEDA (now MSEIDB)– primary ANRS partner institutions;
- Bahir Dar University (BDU) and ARARI (Sirinka research station) – cooperating ANRS institutions;
- Save the Children-UK – implementers of Relief-to-Development (R2D) program;
- Amhara Women's Entrepreneur Association (AWEA), Chambers of Commerce (COC) in Bahir Dar and Dessie - private sector business service providers;
- GTZ, The World Bank, ILO, UNDP, SIDA - donor organizations supporting MSE development; and,
- USAID - Micro-Enterprise Development Department based in Washington.

At the national level, MED has also established relationships with business service providers, Addis Ababa Chamber of Commerce and FeMSEDA. These institutions have tremendous insight, outreach and responsibility to micro-enterprises, rural entrepreneurs and households in the ANRS and are well-poised to partner with the MED component.

7.3.2 Institutional Strengthening and Sustainability

Although both MED primary institutional partners, ACSI and ReMSEDA, have identified several objectives for 2003, a Strategic Action Planning (SAP) workshop was conducted by the MED Advisor for each of the partners in May 2003. The purpose and outcome of the workshop was the clarification of vision and strategic objectives, with the development of institutional action plans for implementation over the next year. Both partners are actively implementing their plans. A Memorandum of Understanding was signed between MED and ReMSEDA. An assessment of partners' training needs was also conducted by the MED Advisor. Most of the training identified will be delivered in the form of technical assistance (TA). MED has identified several in-country consultants available to provide this training, with scheduling to follow based on availability and budgeting.

During 2003, MED also worked with the following organizations in strengthening their organizational capacity.

Lenche Dima Watershed Association: During the third quarter, the MED Team assisted the process of forming the *Lenche Dima Watershed Association* through a series of intensive workshops conducted on the watershed with the full participation of the community. The areas of responsibility for the Association were separated into *Natural Resource Management*, *Business Development*, *Agriculture* and *Social and Welfare* Divisions. As such, the *Business Development Division* of the Association must provide an important function and guidance in leading micro-enterprise activities on the watershed. It is therefore critical for the MED Team to support the transfer of knowledge and skills and promote income-generating activities by delivering tailored training and technical assistance to the community.

Business Service Providers: From its initial observations of the various woredas, the MED Team believes that it will have the greatest impact if it focuses on developing and strengthening specific Business Development Services (BDS) in the ANRS. The four targeted MED woredas are vastly dispersed in the region, with little rural BDS outreach by ReMSEDA. ACSI does have rural outreach, but this is in the form of micro-finance, not BDS. In order to have the greatest synergy and achieve the overall project SO IR 3 - that of increasing and diversifying rural household cash income - the MED component is also working to build the capacity of other private sector BDS providers, notably the Chambers of Commerce (COC) and the Amhara Women's Entrepreneurs Association (AWEA). In 2003 MED worked with these two BDS providers in strengthening their organizational capacity.

Chambers of Commerce (CoC): The MED Team held strategy sessions with the COCs in Bahir Dar, Dessie and Gondar. As a result, the Chambers identified a number of activities required to "jump start" their operations. The Chambers have requested TA in the form of management and organizational development training. MED has discussed these needs with the Addis Ababa COC and they have agreed to support the Amhara region Chambers with training, provided funding is available. The Chambers have also identified various income generating activities that they believe will help sustain the operations of the Chambers, notably trade fairs and a northern Ethiopia business directory.

Amhara Women's Entrepreneurs Association: The Amhara Women's Entrepreneurs Association (AWEA) has received Training of Trainers (ToT) institutional capacity building from the MED Team in the form of management and organizational development. The TOT trainers previously trained by MED conducted training for fifty women entrepreneurs. Besides, AWEA has been doing several activities. These include:

- **Promotion**: Five women TOT trainers are engaging in awareness training to promote the Association throughout the region; efforts commenced in Debre Markos; collaboration began with the regional Women's Affairs Office.

- **Income Generating Activities**: The Association is exploring its options for providing technical assistance for women engaged in clothing design and milk processing.

- **Association Building**: The Executive Committee continues to understand the value in strengthening the association and its management skills as leaders of the organization. As such, it has planned a two-day workshop in October for the Committee and office representatives to share experiences and address additional association needs.

- **Financial**: The Association is currently writing proposals for additional funding opportunities. It is also discussing options for establishing an internal Savings and Credit function for its members.

7.3.3 Business Development & Micro-Finance Skills Training & Training-of-Trainers

In-Country Study Tours: The MED Advisor has identified and visited a number of successful private farms, enterprises, agricultural unions, cooperatives, and associations in Ethiopia.

Technical Assistance: The MED Team has been working with ACSI to assist with the design and implementation of an automated Management Information System (MIS). Over the last three years, ACSI has been working with a programmer to design an MIS with the support of USAID. An MIS Implementation Team was established with members from ACSI, Cybertech and MED Teams. The group met often and established a three-month action plan to finalize testing and implementation of the software program. In the second quarter, ACSI and MED proceeded with the MIS action plan established in March. According to plan, most of April was spent reviewing and testing the functionality of the MIS designed by programmer Dawit Mengistu (contracted by USAID). Based upon the negative results of the testing and further discussions with USAID, it was agreed that the contract with the programmer would not be extended.

In an effort to identify alternative assistance for ACSI's MIS, MED has been coordinating efforts with the USAID MED department based in Washington. This department, along with SIDA (another ACSI donor), conducted an overall institutional assessment of ACSI in July 2003. The final assessment results have not yet been released or discussed, but will identify the critical areas of institutional support that ACSI requires and the resources available to provide such assistance. Future MED activities and TA will be designed and scheduled based on the recommendations of this assessment and the priorities determined jointly with ACSI.

Other technical assistance worth reporting is the visit in June of two BDS specialists from the USAID MED department in Washington. They visited MED and its two partners, ACSI and ReMSEDA. The purpose of the visit was to understand the current BDS and MF activities in the ANRS and to determine how they might be of assistance throughout the project implementation.

7.3.4 Market Demand-Led Entrepreneur Development Activities

There are two major challenges facing private demand-led activities in ANRS. These are:

1) Insufficient market analysis detailing opportunities, potential employment impact and constraints within strategic sub-sectors; and,
2) Insufficient understanding of the resource and skill gaps faced by micro and small enterprises which prevent them from accessing higher value market opportunities or more efficient production and market processes.

These two challenges must be addressed and resolved before specific strategies for the promotion of demand-led entrepreneurship can be developed. The MED component proposed in its annual work plan dual approaches to help resolve these constraints. The first approach was a series of sub-sector studies each year of the project. Training methodology and materials were prepared for the Sub-sector/BDS Market Development study and the first sub-sector was conducted in September with the assistance of the business students at Bahir Dar University.

Brief Summary of Key Findings: The sub-sector analysis identified opportunities in the livestock, skins and hides, bee-keeping and honey production and handicraft sectors. It also identified some of the following constraints that limit MSE growth and income potential in these sectors. These are:

Market

- Weak understanding of market linkages
- Lack of adequate information on product demand and buyers specification
- Lack of marketing and promotional skills
- Lack of 'market'
- Lack of adequate knowledge about quality control of products/services

Technology

- Lack of awareness/ exposure to and information about new technologies
- Lack of access to new technologies to develop and provide new products

Management/Organizational Development

- Lack of skills/knowledge in business management (e.g. bookkeeping and recording)
- Inability to understand the value of being organized
- Mistrust between MSEs resulting in unwillingness to organize to economies of scale
- No coordination or network among similar business
- Lack of knowledge and facilitators to form an association
- Influential decisions from external bodies (and lack of confidence to make decisions)

Input supply

- Seasonal variation of input supplies
- Lack of knowledge and skill to minimize the risk of price fluctuation
- High transportation cost for inputs
- Lack of skill to control the quality of inputs (or supplies)
- Limited outreach of existing suppliers
- Inability of MSEs to organize to economies of scale
- Too few MSEs to organize to benefit from economies of scale

Finance

- Lack of individual loans from micro finance institutions
- Lack of knowledge about grant and lending institutions
- Delayed release of finance from lending and or financing institutions
- Limited number of financial institutions
- Small loan amounts
- Inflexible financing, loan disbursement and repayment periods

Policy

- Lack of awareness of existing policies
- Higher and 'unfair' taxation
- Lack of (or weaker) regulation to control illegal merchants or brokers

Infrastructure, operating environment

- Lack of warehouse
- Lack of access to transportation services
- Lack of information exchanging mechanisms
- Looting during transportation
- Lack of access to telephone or communication services

With a business service orientation, many of these constraints can be addressed and promoted through commercial opportunities. However, the Team's research revealed that very few business services are available to MSEs. Without such services, the development of sustainable solutions to address key constraints will continue to restrict MSE growth and development.

Since this methodology is targeted at donors (USAID, ACDI/VOCA) and practitioners (ReMSEDA, business service providers) involved in MSE development, the SBS study was an imperative step for the MED Team in its efforts to assist ReMSEDA and BSPs with the identification of constraints and opportunities facing MSEs/BSPs in the ANRS, as well as addressing these constraints with sustainable solutions.

7.3.5 Technology Generation, Development and Promotion (TGP)

In the second quarter of 2003, the MED Advisor began identifying products and technologies demanded locally, nationally and internationally. Several potential vegetables (green beans, okra, eggplant, faba beans) have been identified as having existing export market. In collaboration with the AMAREW Watershed and Extension teams and ARARI researchers at the Sirinka station,

MED has begun to explore the possibility of introducing appropriate vegetables with export potential in the Lenche Dima watershed.

7.3.6. Woreda Focus Areas

The MED Advisor was actively engaged in the MED targeted woredas. In the second quarter, the MEDA met with ReMSEDA practitioners in the Debre Tabor, Dessie and Woldiya branch offices. Both Debre Tabor (which has responsibility for Lay Gaynt woreda) and Dessie (which has responsibility for Tehuledere and Kalu woredas) were primarily providing assistance in the form of business and technical skills training. The Woldiya branch does not have any existing activities or planned outreach to the Gubalalafto woreda, which falls within its zonal responsibility. MED has also coordinated activities in Gubalafto and Sekota woredas with the SC-UK R2D MED staff. MED has not begun activities in Belessa.

7.3.7 Cross-Cutting Themes

Throughout implementation of the MF and MED activities, the MED Team is carefully considering cross-cutting themes, including *HIV/AIDS, Nutrition, Gender, Mitigation* and *Capacity Building.* All institutional partners seem to be incorporating awareness training in their everyday activities, particularly with regard to HIV/AIDS and Gender. MED has reinforced the importance of these activities with all of its partners.

7.3.8. Title II Cooperating Sponsor (CS) Activity Coordination

In order to assist the Save the Children-UK R2D MED program, the MED Advisor conducted a four-day SAP workshop for the SC program staff. The purpose and outcome of the workshop was to clarify the vision and strategic objectives of the R2D MED activities in Sekota and Gubalafto, and the level of support required by AMAREW MED component.

7.4. Problems Encountered and Measures Taken

Poor understanding of the complexity of ACSI MIS by partner institutions: The MED team believes that the complexity of the implementation process of ACSI MIS has been under-estimated by ACSI and will require extensive human and management resources, and MED Team oversight.

Target Areas: The MED woredas are widely dispersed. As a result of the budget reductions, the MED component has focused its efforts in the Lenche Dima Watershed (Gubalafto) and Tehuledere woreda, primarily due to proximity and potential for income generation. ReMSEDA had planned branch office expansion to the woreda level to begin in September; however, this remains in the planning stages. As agreed in the revised work plan and once ReMSEDA is prepared, MED will provide training and technical assistance to the ReMSEDA staff at the new woreda offices. ReMSEDA has prioritized its office expansion in the six pilot MED woredas.

From its initial observations of the various woredas, MED believes that it could have the greatest impact if it focuses on developing and strengthening specific Business Development Services (BDS)

in the ANRS. The four targeted MED woredas are vastly dispersed in the region, with little rural BDS outreach by ReMSEDA. ACSI does have rural outreach, but this is in the form of micro-finance, not BDS. In order to have the greatest synergy and achieve the overall project SO IR 3 - that of increasing and diversifying rural household cash income - the MED component has been working to build the capacity of other private sector BDS providers, notably the Chambers of Commerce and the Amhara Women's Entrepreneurs Association. By extending institutional capacity to these organizations, the MED component will have greater outreach to the rural entrepreneurs and enterprises.

Staff Turnover: During 2003 the MED Advisor and her associate resigned. Because of this, the activities of ACSI and MSEID have been greatly hampered. The filling of these positions will await the planned redesigning of the AMAREW Project.

Annex 1. List of AMAREW Project Staff in 2003

No.	Name	Gender	Education Level	Position	Remarks
1	Brhane Gebrekidan	M	Ph.D.	CoP and Senior Research Advisor	
2	Kent Reid	M	Ph.D.	Integrated WS Mgt. Advisor	
3	Angela Neilan	F	M.S.	Extension, Comm. & Training Advisor	Until June 2003
4	Gina Kuta	M	MBA	MED Advisor	Until Dec. 2003
5	Fekadu Yohannes	M	Ph.D.	Research Associate	
6	Elias Zerfu	M	Ph.D.	Research/Extension/ Training Associate	
7	Habtemariam Kassa	M	Ph.D.	Extension Associate	
8	Yitayew Abebe	M	M.S.	Wshed Mgt. Associate	
9	Taye Hailu	M	M.Ac.	Program Administrator	
10	Ali Abdi	M	B.A	MED Officer	Until April 2003
11	Tenna Shitarek	M	M.S.	MED Associate	Until Dec. 2003
12	Andualem Dejenu	M	B.A	Accountant/Ass. Admin.	Until Sep. 2003
13	Abitew Demiss	M	B.A.	Accountant	Until Feb. 2003
14	Daniel Nigussie	M	B.A.	Accountant /Ass. Administrator	From Oct. 2003
15	Saada Mohammed	F	Junior College Diploma	Senior Secretary	
16	Aster Tekalign	F	Junior College Diploma	Ass. Secretary/ Receptionist	
17	Beyene Negash	M	High school Diploma	Driver	
18	Workneh Yalew	M	High school Diploma	Driver	
19	Nebiyu Mussie	M	High school Diploma	Driver	
20	Yohannes Bekele	M	High school Diploma	Driver	Until Dec. 2003
21	Fasika Desta	F	High school Diploma	Janitor	
22	Yehizbalem Gebeyehu	F	5th grade	Janitor	
23	Tadesse Kassa	M		Security Guard	

24	Dagne Derso	M	8th grade	Security Guard	
25	Alem Deribe	M	6th grade	Security Guard	

Annex 2. List of AMAREW Project RIT Members in 2003

Dr. Abera Teklemariam, Chair, (BoRD)

Ato Amlaku Asres /Ato Tsegaye Boru (Secretary), (FSPCO)

Dr. Enyew Adgo /Dr. Gete Zeleke, (ARARI)

Ato Adebabay Mengist /Ato Dereje Biruk, (BoA)

Dr. Zerfu Hailu /Ato Menberu Alebachew, (EPLAUA)

Ato Assefa Abera, (DPPC)

Ato Getaneh Gobezie /Ato Mekonnen Yelewumwossen, (ACSI)

Ato Sitotaw Abay /Ato Yared Fekadu, (MSEIDB)

Ato Amsayaw Anteneh, (BoFED)

Ato Ayenew Belay, (CPB)

Dr. Tadele Gebreselassie, (USAID / Ethiopia)

Dr. Brhane Gebrekidan, (AMAREW Project)

Ato Taye Hailu, (AMAREW Project)

Annex 3. List of Primary Contact Persons of AMAREW Project in ARARI and BoA

Dr. Enyew Adgo	(ARARI, Bahir Dar)
Ato Akalu Teshome /Ato Alemayehu Assefa	(Adet RC)
Ato Zewdu Birhane	(Sekota RC)
Ato John Abdu	(Sheno RC)
Ato Abrham Abiyu /Ato Addisu Tesfaye	(Sirinka RC)
Ato Tadesse Beyene	(BoA, Bahir Dar)

Acronyms

ACDI/VOCA	Agricultural Cooperative Development International/Volunteers in Overseas Cooperative Assistance

ACSI	Amhara Credit and Saving Institution
AMAREW	Amhara Micro-enterprise development, Agricultural Research, Extension and Watershed management
ANRS	Amhara National Regional State
ARARI	Amhara Regional Agricultural Research Institute
ATVET	Agricultural Technical Vocational Education
AWEA	Amhara Women's Entrepreneur Association
BDS	Business Development Services
BDU	Bahir Dar University
BoA	Bureau of Agriculture
BoFED	Bureau of Finance and Economic Development
BoRD	Bureau of Rural Development
CIP	Centro International de la Papa
CoC	Chamber of Commerce
COLTA	Community Organization Leadership Towards Action
CoP	Chief of Party
CPAR	Canadian Physicians for Aid and Relief
CPB	Cooperative Promotion Bureau
CRSP	Collaborative Research Support Program
CWMO	Community Watershed Management Organization
DA	Development Agent
DPPC	Disaster Prevention and Preparedness Commission
EARO	Ethiopian Agricultural Research Organization
EGS	Employment Generation Scheme
EPLAUA	Environmental Protection, Land Use and Management Authority
ESRDF	Ethiopian Social Rehabilitation and Development Fund
EU	European Union
FAO	Food and Agricultural Organization of the United Nations
FeMSEDA	Federal Micro and Small Enterprises Development Agency
FFS/IPM	Farmers' Field School /Integrated Pest Management
FFW	Food For Work
FHI	Family Health International

FREG	Farmers' Research Extension Group
FSPCO	Food Security Program Coordination Office
GIS	Geographical Information System
GTZ	German Agency for Technical Cooperation
Ha	Hectare
HH	Household
HQ	Head Quarter
ICRISAT	International Crop Research Institute for the Semi-Arid Tropics
ILO	International Labour Organization
INTSORMIL	International Sorghum/Millet
IR	Intermediate Result
IWDMT	Integrated Watershed Development and Management Team
KSA	Knowledge, Skill and Attitude
MED	Micro Enterprise Development
MFI	Micro Finance Intitution
MIS	Management Information System
MoFED	Ministry of Finance and Economic Development
MoU	Memorandum of Understanding
MSE	Micro and Small Enterprises
MSEIDB	Micro and Small Enterprises and Industries Development Bureau
NGO	Non Governmental Organizations
PA	Peasant Association
PMP	Performance Monitoring Plan
Qt.	Quintal
R2D	Relief to Development
RC	Research Center
RCBD	Randomized Complete Block Design
REFAC	Research Extension Farmer Advisory Council
ReMSEDA	Regional Micro and Small Enterprises Development Agency
RHPP	Rural Household Production and Productivity
RIT	Regional Implementation Team
SC-UK	Save the Children – United Kingdon

SGMP	Small Grant and Mentorship Program
SIDA	Swedish International Development Agency
SNV	Stishping Nederlandse Vrigwilligrs
SO	Strategic Objective
SRA	Senior Research Advisor
ToT	Training of Trainers
UNDP	United Nations Development Program
USAID	United States Agency for International Development
VT	Virginia Tech
WFP	World Food Program
WH	Water Harvesting