Ethiopia:
Amhara National Regional State Extension System Needs Assessment

July 2000

Rural and Agricultural Incomes in a Sustainable Environment

(RAISE)
IQC No. PCE-1-00-99-00001-00
Task Order 814

Submitted to:
USAID/Ethiopia

Submitted by:
ARD-RAISE Consortium
1601 N. Kent Street, Suite 800
Arlington, VA 22209
U.S.A.
www.ard-raise.com

ARD-RAISE

Ethiopia:
Amhara National Regional State
Extension System Needs Assessment

by

Dr. Donald R. Jackson, Team Leader
Dr. Andrew Barnes, Extension Specialist
Dr. Grace Njeri Matiru, Home Economist
Mr. Flemming Heegaard, Education Specialist

In collaboration with:

Dr. Enyew Adgo, Food Security Unit
Mr. Habtamu Segahu, Bureau of Agriculture

Presented to
USAID/ETHIOPIA
under the Rural and Agricultural Incomes with a Sustainable Environment (RAISE)
Contract No. PCE-I-00-99-00001-00: Task Order 814

July 2000

ARD-RAISE Consortium
1601 North Kent St., Ste 800
Arlington, VA 22209
Tel: 703-807-5700, Fax: 703-807-0889
gkerr@arddc.com

The ARD-RAISE Consortium:
ARD, Inc., Cargill Technical Services,
Associates for International Resources and Development, CARANA Corporation,
A.P. Gross & Company, International Programs Consortium, Land O' Lakes,
Purdue University, and TechnoServe

TABLE OF CONTENTS

LIST OF ACRONYMS

ACSI	Amhara Credit and Savings Institution
ADA	Amhara Development Association
AISE	Agricultural Input Supply Enterprise
ANRS	Amhara National Regional State
BoA	Bureau of Agriculture
BoE	Bureau of Education
BoH	Bureau of Health
BoPED	Bureau of Planning and Economic Development
BoTI	Bureau of Trade and Industry
CARE	Cooperative for Assistance and Relief Everywhere
CFW	Cash for Work
CIDA	Canadian International Development Agency
CISP	Comitato Internazionale Per Lo Sviluppo Dei Popli
DA	Development Agent
DPPC	Disaster Prevention and Preparedness Commission
EAL	Ethiopian Amalgamated Limited
EARO	Ethiopian Agricultural Research Organization
EGS	Employment Generation Scheme
EPRDF	Ethiopian Revolutionary Democratic Front
ESE	Ethiopian Seed Enterprise
EU	European Union
FFW	Food for Work
FSU	Amhara Regional Food Security Unit
GMRP	Grain Market Research Project
GTZ	Gesellschaft für Technische Zusammen Arbeit (German Technical Cooperation
HPP	Hillside Privatization Program
IFSP	Integrated Food Security Program
IQC	Indefinite Quantity Contract
MEDaC	Ministry of Economic Development and Cooperation
MoA	Ministry of Agriculture
NGO	Nongovernmental Organization
ORDA	Organization for Rehabilitation and Development of Amhara
PTO	Planning and Training Office (BoA)
PADETES	Participatory Demonstration and Training Extension System
RDC	Rural Development Committee
REFLC	Research, Extension, and Farmer Liaison Council
RELC	Research and Extension Liaison Committee

RSC	Regional State Council
SARC	Sirinka Agricultural Research Center
SIDA	Swedish International Development Authority
SMS	Subject Matter Specialist
SOW	Scope of Work
USAID	United States Agency for International Development
UNDP	United Nations Development Program
VOCA	Volunteers in Overseas Cooperative Assistance
WFP	World Food Program

CHAPTER 1
INTRODUCTION

The following assessment of the extension system of the Amhara National Regional State (ANRS) was conducted over the period from May to July 2000 under the RAISE Indefinite Quantity Contract (IQC) mechanism. It forms part of an ongoing Results Framework formulation currently being undertaken by the USAID Mission to Ethiopia to achieve the **Mission Goal** of "Increased Food Security" in the country. Specifically, it is directed at partially achieving **Strategic Objective Number 3,** "Increased Agricultural Production and Productivity" through **Intermediate Result 3.3**, "Rural Household Cash Crop and Micro-Enterprise Income Increased/Diversified" and **Intermediate Result 3.5**, "Extension Service Dissemination of Technological Information in Targeted Areas Improved".

Other intermediate results proposed under the Results Package include support for the integration of food, livestock, and factor markets, increased competition in agricultural input and output markets, and strengthened agricultural research systems in dryland cropping and livestock for the 48 targeted districts (*woredas*) in the ANRS. Additionally, an assessment and corresponding Results Package concerning four integrated pilot watershed development areas directed at community-based approaches to sustainable natural resource management was conducted in unison with this assessment.

The assessment to follow is divided into several chapters including: Methodology, Background, Findings and Conclusions, and Issues and Recommendations. The Findings and Conclusions chapter is primarily directed at answering five sets of questions that were asked in the Scope of Work (SOW) for the assessment. The Issues and Recommendations, on the other hand, arose during the fieldwork conducted in the pursuit of answers to the questions posed in the SOW and are divided into those pertaining to their respective Intermediate Results; Rural Household Income (IR3.3) and Extension Service Technological Dissemination (IR3.5).

CHAPTER 2
METHODOLOGY

This assessment was conducted by a team of four development professionals working in collaboration with Mission personnel, as well as representatives from both the ANRS Bureau of Agriculture (BoA) and the Food Security Unit (FSU). Aside from the drafting of the assessment document, the team spent its entire time in the Amhara Region. Data collection included an in-depth reading of appropriate documentation on a wide range of topics concerning agriculture in the region, food insecurity, proposed plans to alleviate that insecurity, and ways in which rural households might benefit from various assistance measures.

The team also made field trips to five administrative zones of the ANRS (Waghimra, North Wollo, South Wollo, South Gondar, and West Gojjam) where a majority of the 48 targeted districts are located. Interviews were held with zonal officials, district officials, and township officials (*kebele*) working for the BoA. These included administrators, subject matter specialists (SMSs), extension agent supervisors, and extension or development agents (DAs). Farmers and agricultural service cooperative members and leaders were also interviewed. Also, the team visited one extension agent training center and two agricultural research centers where additional interviews were conducted. At all times the team made every attempt to interview women in all of the above categories so as to gain an appreciation of gender sensitive issues.

Upon returning to Bahir Dar, the capital of the ANRS, the team conducted follow-up interviews with BoA, FSU, and Bureau of Planning and Economic Development (BoPED) officials. Representatives from two international donors, two local nongovernmental organizations (NGOs) supporting development programs in the targeted districts, one fertilizer supply company, and one technology multiplication center were also interviewed.

After completing a preliminary draft of this assessment, the team's conclusions and recommendations were presented in a workshop in Bahir Dar attended by more than 40 stakeholders from the appropriate agencies and organizations contacted during the interview process. The preliminary draft was also circulated for comments among representatives from the Mission's Agriculture and Natural Resources office, the Title II office, the Program office, and the Monitoring and Evaluation office. Comments from both groups were incorporated into the final draft assessment.

Based on the content and terminology used in the SOW, the team placed its primary emphasis on an assessment of the BoA's Extension Service in the ANRS which is embodied in IR 3.5. During final assessment write-up, and through mutual agreement between the assessment team and the Mission's Agriculture and Natural Resource Office staff, it was agreed that the final assessment would also attempt to include an emphasis on issues surrounding IR 3.3, and that the concept of the BoA's Extension Service would be expanded to cover the much broader extension system involving several other bureaus and agencies of the ANRS as well.

CHAPTER 3
BACKGROUND

Ethiopia's agricultural research and extension system on the whole is said to be one of the best in Africa. For example, at the national level among the approximately three million farmers reached by the research and extension system between the period 1993-1998, maize production yields increased from 1.6 metric tons per hectare to 5.1, or almost 220 percent. Wheat yields also more than doubled over the same period from 1.2 metric tons per hectare to 2.8, or 133 percent[1]. Nevertheless, this was among the farmers best equipped to adopt the new technologies being promoted by the research and extension services—those with relatively good land and adequate rainfall. It is also an indication of the priorities that the current and past governments have placed on the relatively high production areas of the country in terms of overall agricultural development, including research, extension, and input supply. In other, low priority, parts of the country where these conditions do not exist, the situation is much different.

For at least two generations, farmers in many parts of the country have been experiencing a three-pronged assault on their ability to extract sufficient production from their land to feed their families, not to mention their ability to produce a surplus and thereby earn household income which has declined even further. Decreasing farm size due to population growth, now estimated to be 0.7 ha per family, often in more than one plot; the degradation of soil fertility due to a lack of conservation and protection measures; and decreasing and erratic rainfall in many areas have led to a situation where an estimated 40 percent of the country's rural households cannot produce enough food or income to cover their yearly needs[2].

Additionally, since the mid-seventies, the issue of decreasing and more erratic rainfall is considered to be synonymous with the term "drought" and has been seen as a relatively short-term situation that will eventually go away. It has not been until recently that policy makers and planners have begun to take the more long-term view that reduced rainfall should be considered as part of global climatic change that is most likely here to stay, at least for the foreseeable future[3]. As a result, mechanisms are now being put into motion at both the federal and regional levels to switch attention and resources to the lower rainfall portions of the country.

While the ANRS mirrors the national situation in terms of the differences between food surplus and food deficit areas, as well as having the same causes for the problems in the food deficit areas, all indicators appear to be worse, and in some cases much worse. For example, the most recent data indicates that the number of food deficit households in Amhara Region exceeds 76 percent[4]. The majority of these food deficit households are located in 48 districts roughly comprising the eastern one-third of the region (these include all, or part, of the zones of Waghimra, North and South Wollo, South Gondar, Oromiya, East Gojjam and North Shewa) where food insecurity, even in years of relatively "good" rainfall, can reach 100 percent. It is precisely these 48 districts where the FSU is directing its efforts and where the Mission is expected to concentrate a majority of its resources. Nevertheless, even in the relatively food

[1] Ministry of Agriculture (MoA).
[2] SO3 Document.
[3] FSU.
[4] FSU, Food Security Strategy.

surplus zones of West Gojjam, Awi, and North Gondar, the amount of marketable surplus is only approximately 25 percent at the family level, with population pressure and soil degradation taking a heavy toll on production and productivity as well.

CHAPTER 4
FINDINGS AND CONCLUSIONS

A. THE NATIONAL AGRICULTURAL EXTENSION SERVICE

1. Findings

In Ethiopia, as a result of decentralization, the vast majority of implementation activities ascribed to the ministries of agriculture in many countries have been passed on to the regions/states. As a result, the National Agricultural Extension Service is quite limited in terms of its staffing, policymaking, and outreach. To the extent the National Service has any impact on national-level policies, it is in the form of advice, both formal and informal, to policymakers. This is also the case between the National Extension Service and the regional BoAs. Additionally, while the National Service is charged with certain regulatory functions, all policies regarding regulations must be approved by the Federal Parliament. Once regulations are approved, however, the National Service has little staff and even fewer resources to implement them. They are also often modified by the Regional Councils based on local conditions and needs.

The Ministry itself is divided into four technical departments including: Natural Resource Conservation; Livestock and Fisheries; Crop Production, and Extension[5]. The Ministry of Agriculture's (MoA's) Extension Department is further divided into six sections, including three that represent the major farming systems existing in the country, High Rainfall (above 1000 mm per year), Low Rainfall (between 700 and 1,000 mm per year), and Pastoral (below 700 mm per year). A Cooperative Development and Input Coordination Section, a Market Price Monitoring and Information Section, and an Extension Materials Section complete the list.

The National Extension Service is staffed by sixty-four technicians; fourteen in each of the farming systems units, fourteen in the Cooperative and Input Unit, and eight in the Extension Materials Unit. Of the sixty-four, four have Ph.D. degrees and sixty have Master's degrees. Transfers of regional extension staff between regions do not take place and transfers from the regional to the national level only take place when a position becomes vacant and a regional staff member applies and is accepted. This is relatively rare.

The principal activity of the national-level technicians is to organize and provide training sessions for regional-level SMSs, be it on new research findings issued by EARO, or refresher courses. These are planned twice per year per region, but once per year is more common. The national-level technicians are also involved in organizing and implementing study tours; in-country if the budget permits and to neighboring countries if there is donor funding. They are also involved in the evaluation of regional-level extension activities on a twice-yearly basis. The National Service also maintains three of its own training centers; one for Home Agents and two for development agents (DAs). Neither is specialized in dryland agriculture and none are located in Amhara Region. If the regional BoAs wish to upgrade the educational level of their staff at these centers they must pay for the services out of their regional budgets.

[5] Note the absence of a department for agricultural research. The Ethiopian Agricultural Research Organization (EARO), until recently under the National Science and Technology Council and now under the Prime Minister's Office, has had little to do with the Extension Service.

The Cooperative Development and Input Coordination Unit is primarily responsible for collecting information on yearly agricultural input requirements (fertilizer—urea and di-ammonium phosphate—being the vast majority) of the various regional states. This information theoretically originates in discussions between the regional-level DAs and the farmers and cooperatives that receive their assistance. It is then aggregated as it passes up the chain (*kebele*-district-zone-region) to the federal level. The national level then authorizes the importation of the required amounts of fertilizer for ultimate sale through quasi-government agencies, and private companies. In practice, however, this process begins in September long before farmers have decided which crops they will plant, or even if they will be using fertilizer at all. This has resulted in the regions often simply estimating the coming year's requirements based on the previous year's usage patterns. As a result, there are often shortages and gluts in the fertilizer supply system.

The Extension Materials Unit is responsible for the preparation of information in the form of technological packages determined and provided by the research community and the federal-level SMSs. These materials, in both booklet and video form, are intended for use by regional SMSs and DAs for their use in the training and demonstration of the various technologies to farmers. In practice, however, due to budget limitations only a small percentage of SMSs and DAs actually receive these materials.

At the policy level, the National Extension Service is currently engaged in several lobbying efforts to improve the extension delivery system, principally at the DA level, including: attempting to convince the regional BoAs and the regional Civil Service Administrations to increase the salary levels of DAs (in general, as well as through upgrading their educational levels); providing the DAs with a plot of land, in addition to an office/house, on which they can demonstrate various technologies and from which they can derive additional income; and exempting DAs from regulatory and debt collection responsibilities. These points have already been incorporated into the new Five-Year Plan scheduled to be approved by the Parliament in August 2000. It is the Regional Councils, however, that must approve them based on budget availability, priorities, and willingness, if they are to be implemented.

2. Conclusions

The National Agricultural Extension Service, as a result of decentralization, has become a support and lobbying body with almost no implementing authority. Its linkages to agricultural research are extremely weak. Additionally, budgetary constraints further limit its ability to carry out even its limited mandate.

B. THE ANRS AGRICULTURAL EXTENSION SERVICE

1. Findings

For practical purposes, the ANRS BoA is divided into four departments: Planning and Training Services; Public Relations, Legal, Administrative and Financial Services; Extension; and

Protection and Regulatory Affairs[6]. The Extension Department at the regional level contains 27 people classified as technicians who are organized into six teams that can best be described as disciplinary groupings including: Crop Development; Livestock Resource Development; Natural Resource Development; Extension Communications; Coffee, Vegetables and Fruit Development; and Inputs and Credit Services (see Figure 1). There is no division of responsibilities based on agro-ecological or climatic factors, especially regarding dryland agricultural systems or food insecure areas.

The regional state, as well as the BoA, is divided into ten administrative zones, all of which contain a diversity of agro-ecological areas that, as was stated above, tend to become drier and more food insecure in a west to east direction. Each BoA zonal office is organized in a similar manner as the region and contains, among others, managers and SMSs. The zones are further divided into *woredas* of which there are 105 in the region. The district offices are organized in a similar manner to the zones and the region and contain technical Experts, DA Supervisors, and DAs who deal directly with farmers[7].

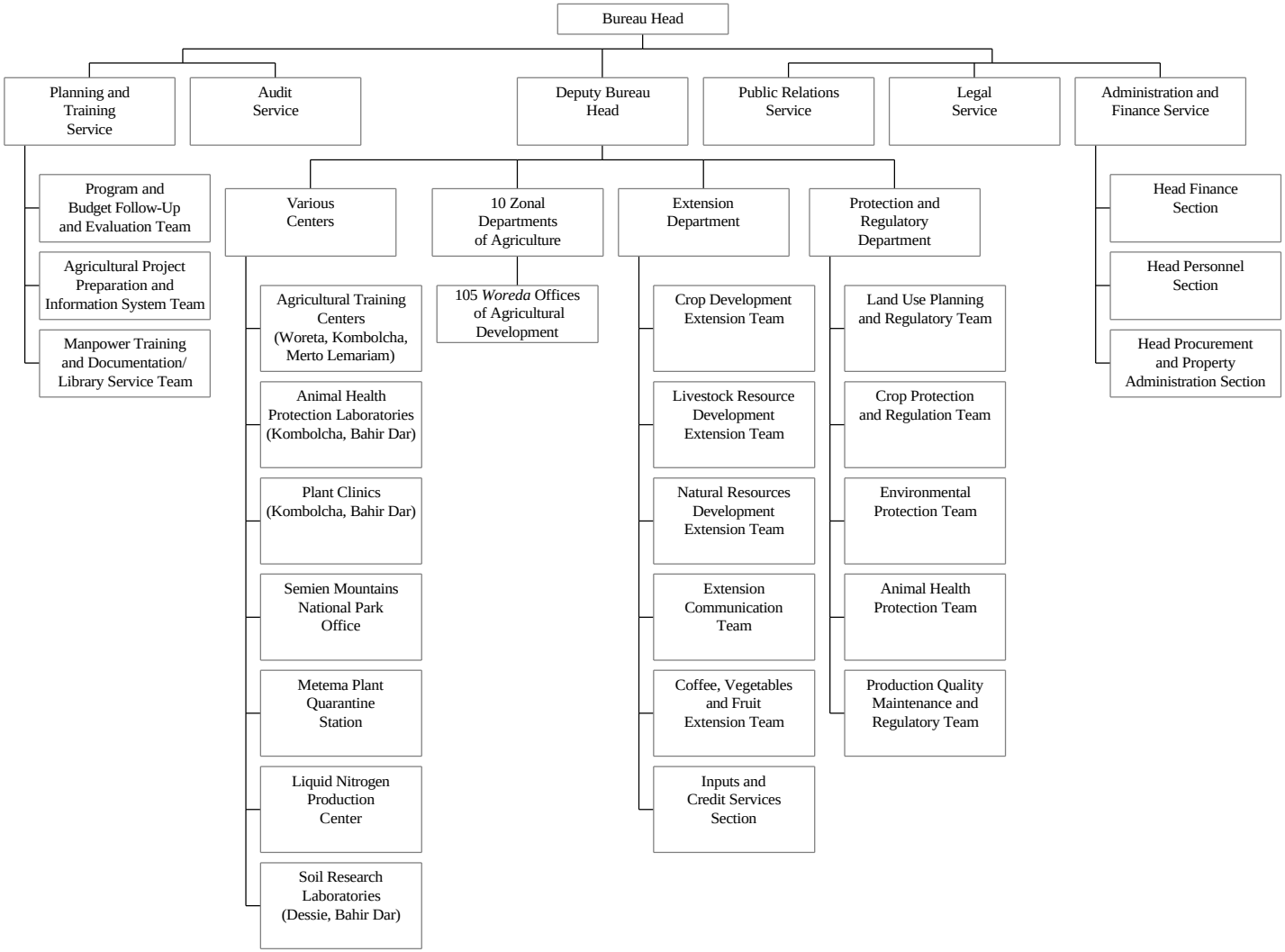
The extension methodology used by the Bureau is called the Participatory Demonstration and Training Extension System (PADETES). It basically uses the DAs as the main point of contact between the BoA and farmers through the use of demonstration plots on the farms of better, more advanced farmers who are willing to serve as models for five to ten of their neighbors. The information extended is included in 84 technical packages on a broad range of topics including: grain and legume crops (18), horticultural crops (26) livestock management (22), natural resource management (10), and post-harvest practices (8) (see Appendix A for a detailed listing of these packages).

Supervisors monitor up to ten DAs and, in turn, are assisted in technical matters by eight to ten Experts at the district level (i.e., experts in agronomy, horticulture, livestock, soil conservation, forestry, irrigation, post-harvest issues, etc.). This team is then replicated at the zonal level, where they are called SMSs and ultimately at the regional level. Ideally, information is to flow in both directions, to the farmers and, based on actual results, from the farmers back up the system to decision makers who adjust the technical packages according to the reported results.

Due in large measure to the vagaries of agriculture and the nature of many of the 'green revolution', external input-dependent technologies being promoted, it is not a perfect system in the view of many farmers and DAs interviewed. Nevertheless, according to BoA officials, it is responsive to the needs of farmers in general, especially in the relatively high rainfall, high production areas. The BoA does admit, however, that due to a shift in priorities from these areas

[6] As is the case at the national level, agricultural research in the region does not fall under the Bureau at this time.
[7] DAs are currently further classified as Assistant DAs and DAs, depending on their level of education. The Assistant DAs have graduated from high school and have received a Certificate representing three to nine months of agricultural training. The DAs have graduated from high school and have received a Diploma representing two additional years of agricultural training.

Figure 1: Bureau of Agriculture Organizational Chart



to the lower rainfall, less productive areas of the region, and to a lack of proper coordination with the agricultural research community, it has not been as responsive to these areas.

The DAs, their supervisors, and to a some extent the Experts, in the past have normally been assigned to the district, or close to the district, where they have grown up and where their families live. Being from the area was thought to give the DAs better access to, and acceptability by, local farmers. Nevertheless, this placement policy is under review since the BoA has observed that some DAs assigned to their districts of origin tend to concentrate their efforts on the farms of family members and/or tend to become involved in other family activities.

In the past, this has also meant that there have been very few transfers of DAs and their supervisors between districts. The rare exception to this is when a DA, supervisor, Expert, or SMS is transferred or promoted from the local level to the district or zonal level as positions become available. Extension staff leaving the service, or staff turnover, is also low in spite of low salaries and the difficult working conditions described below. The availability of alternative employment is an important factor in the low turnover of staff. On the regional level, annual DA turnover averages five percent and varies between zones and educational level. For Diploma holders the range is between 3.4 and 9.4 percent, whereas for Certificate holders the range is between 1.4 and 5.0 percent[8].

Tables 1 thru 3 present the numbers of DAs, Supervisors, and SMSs by zone for the years 1998 and 2000 (disaggregated by gender where possible). These figures represent positions for which BoA funding is available.

Table 1: Number of DAs in the 10 Zones of the ANRS (1998 and 2000)

Zone	1998			2000		
	Males	Females	Total	Males	Females	Total
West Gojjam	256	68	324	350	112	462
East Gojjam	375	77	452	380	80	460
Awi	175	56	231	174	54	228
South Gondar	372	100	472	429	108	537
North Gondar	381	217	598	409	273	682
Waghimra	84	30	114	92	16	108
North Wollo			404	315	134	449
South Wollo	427	93	520	637	145	782
Oromiya	72	22	94	92	15	107
North Shewa			519	393	109	502
Total	**2142**	**663**	**3728**	**3271**	**1046**	**4317**

[8] BoA statistics.

Table 2: Number of Supervisors in the 10 Zones of the ANRS (1998 and 2000)

Zone	1998			2000		
	Males	Females	Total	Males	Females	Total
West Gojjam	38	1	39	39	0	39
East Gojjam	57	1	58	49	1	50
Awi	33	2	35	23	1	24
South Gondar	46	3	49	34	3	37
North Gondar	64	3	67	62	1	63
Waghimra	17	0	17	16	0	16
North Wollo	64	0	64	35	2	37
South Wollo	80	5	85	58	2	60
Oromiya	18	0	18	11	1	12
North Shewa	51	2	53	53	1	54
Total	**468**	**17**	**485**	**380**	**12**	**392**

Table 3:Number of SMS in the 10 Zones of the ANRS (1998 and 2000)

Zone	1998			2000		
	Males	Females	Total	Males	Females	Total
West Gojjam			79	113	8	121
East Gojjam			106	104	12	116
Awi			54	78	5	83
South Gondar			100	145	14	159
North Gondar			128	142	10	152
Waghimra			31	23	0	23
North Wollo			71	73	6	79
South Wollo			144	158	3	161
Oromiya			29	35	1	36
North Shewa			124	123	13	136
Total			**866**	**994**	**72**	**1066**

Source: Extension Division, BoA, ANRS, Bahir Dar, 6/2000.

Several observations can be made concerning these tables:

- While the number of DAs and SMSs has increased by 16 and 23 percent respectively over the past two years, the number of Supervisors has decreased by 19 percent. In the case of DAs, this can be seen as 'new blood' being injected into the system, whereas in the case of Supervisors and SMSs it is most likely the result of staff being promoted as a result of vacancies at the SMS level.
- The number of females in the system at present is 24 percent for DAs, 3 percent for Supervisors, and 7 percent for SMSs. Some of these numbers reflect the abolishment of the Home Agent category, which was composed solely of women who then became DAs, and the creation of Home Agent positions at the SMS level.
- While the tables show the number of funded positions, the number of vacancies is another important variable that varies considerably. Vacancies vary greatly, depending

on relative isolation, and range from South Gondar with only one vacancy to Waghimra that has 86 percent of its positions vacant due to its isolation and lack of basic services[9].

Of even more relative interest than staffing levels is the DA to farmer ratio. During field data collection the team was told of ratios ranging from 1:400 to 1:1,660. The BoA is aware that these ratios are impossible for one agent to be effective and attempts to limit the ratio to a maximum of 1:1,000, with a target of 1:500-600 being within the budgetary possibilities of the Bureau.

In practice, yet another ratio is often used. This relates to the number of farmers in a DA's geographically assigned area that have adopted a new technology, or that the DA is actually working with. These ratios are often in the 1:200-400 range and most probably demonstrate a more realistic level of interaction with farmers. They say nothing, however, about the significant numbers of farmers who are beyond the reach of the Extension Service, or for a variety of reasons have chosen not to adopt any of the technological packages. Of critical importance is the fact that this 'functional' ratio appears to be dropping, especially in the food insecure districts, as the number of farmers utilizing the BoA's technological packages drops year after year; principally as a result of inadequate and erratic rainfall for the 'green revolution', input-dependent technologies being promoted, as well as a lack of appropriate packages for these districts.

Turning to the educational level of the three categories presented above, the data for 1999 is quite revealing. For all ten zones, only 12 percent of the DAs had Diplomas (high school, plus two years of agricultural training), and 88 percent were Certificate holders (high school plus three to nine months of agricultural training). Among Supervisors, 60 percent held Diplomas, 38 percent held Certificates, and two percent had no Certificates. At the SMS/Expert level six percent had Master's degrees, 31 percent held Bachelor's degrees, 57 percent had Diplomas, and six percent had Certificates or less[10].

The relatively little time DAs and Supervisors spend in training combined with the broad-based 'generalist' training they receive on a wide variety of topics is not sufficient for the responsibilities that they are expected to carry out. Additionally, they currently receive no training in extension methods or in how to deal with farmers. Likewise, Supervisors are not trained in how to manage the six to ten DAs they supervise.

The upgrading of SMS/Expert education, from the Diploma to the B.S. or the B.S. to the M.S. levels, is seen as an incentive based on merit for a limited number of current BoA staff. The BoA's general policy on this issue, however, is to hire recent graduates from national universities rather than to upgrade existing staff.

In-service training, refresher courses, and workshops could be a partial answer to the obvious low levels of education, especially at the DA and Supervisor level. In fact, the BoA mandates that 'training' workshops take place every three months. Nevertheless, the DAs, Supervisors,

[9] Team interviews with Zonal Heads, as of June, 2000.
[10] FSU: Extension Proposal, June 1999.

and SMSs interviewed universally agreed that these workshops provided them with no new information and normally centered on planning issues or the problems facing their districts.

The salary scales for extension workers are set by the Regional Civil Service and do not vary by zone, but rather are determined by level of education and years of service (blanket raises are provided every two years). There are also two salary grade levels in the Assistant DA category and two in the DA category. Using an average elementary school teacher's monthly salary of Birr 445 as a reference point, entry-level DA Certificate holders receive Birr 285 and entry-level Diploma holders receive Birr 420. Incentive payments between 30 and 90 Birr per month for extension workers achieving 90 percent of assisted farmer's production targets are theoretically available but are rare in practice, especially in the food insecure districts where production is highly dependent on rainfall. At times, and in some districts, the BoA has attempted to address the issue of low salaries by providing DAs with boots and raincoats, as well as housing and an office, but this is often not the case[11].

Additionally, as a result of budget constraints placed on the BoA, the working conditions of the entire Extension Service are extremely difficult with the DAs and their Supervisors being relatively worse off. The topography of the areas where the DAs, Supervisors, and SMSs must work, especially in the food-insecure districts, is extremely rugged and the distances are often great. Precise figures do not exist, but it is estimated that only 25 percent of extension staff have access to mules, horses, or bicycles; the rest simply have to walk. (Team interviews with zonal officials.) Even at the SMS/Expert level, only one or two motorcycles must serve the needs of ten to fifteen professionals, and even these are often out of service due to a lack of funding for maintenance, spare parts, and fuel. A lack of extension materials, either for use by the extension staff itself, or for agents to use with farmers are inadequate in the former case and nonexistent in the latter.

Another finding of particular importance related to the work load for DAs already mentioned above is that, in the past, they were considered 'multipurpose' agents, not only by the BoA, but by several other governmental offices as well. DAs were used for everything from identifying conscripts for the army, to collecting 'taxes' in the form of quintals of grain, to collecting production loans made by the BoA. While this is not the case any more, there is still a tendency on the part of the Bureaus of Health (family planning/AIDS education), Education (teaching certain classes), and Trade and Industry (off-farm income promotion and data collection) to request that the DAs assist them in their activities. Also, while not part of their official duties, DAs often choose to become involved in the planning and collection process for credit for agricultural inputs. Without access to credit and external inputs, many of the technological packages have no significance, and unless farmers repay their loans on time they will not be eligible for credit during the next agricultural cycle.

Although the BoA has recently decided to reject the requests from other bureaus for the services of the DAs, they are still considered to be generalists responsible for extending agricultural information to farmers on up to 84 technical packages mentioned above. The DAs are also expected to take part in collecting information on farmer demand for inputs, food distribution

[11] 65 percent of DAs have been provided with a house and 54 percent with an office, according to the BoA.

programs, food and Cash for Work (CFW) programs, and are often used by the *kebele* and district administrations for other purposes.

2. Conclusions

The Extension Service of the BoA is understaffed, undereducated, underbudgeted, and lacks the materials necessary to do the job it is expected to do. The agricultural discipline approach to its organization combined with the multipurpose training and utilization of its staff in the past has made it unable to properly address the constraints of the Amhara Region; especially in the food insecure zones and districts.

C. LINKAGES BETWEEN AGRICULTURAL RESEARCH, EXTENSION, AND FARMERS IN THE ANRS

1. Findings

a. Linkages

The EARO Dryland Agricultural Research Strategic Plan (July 99) states,

> "There has been limited success in extending technologies generated from dryland farming research to end users. No formal system exists that links dryland researchers with end users. This indicates the need for establishing a proper farmer-research-extension linkage."

This statement adequately describes the situation in the ANRS.

Agricultural research in the ANRS is conducted on three research centers: Adet Research Center in West Gojjam; Sheno Research Center in North Shewa; and Sirinka Research Center and its substation at Kobo in North Wollo. All three centers are currently autonomous units reporting directly to the Regional Council. Nevertheless, a Research Coordination Unit has been created within the BoA and in the future these research centers will fall under the auspices of the Bureau.

Researchers spend a majority of their time at these centers and consequently do not have much contact with farmers, DAs or district-level extension specialists of the BoA, although some on-farm research trials are beginning to be conducted. Research priorities appear to be 'supply driven', based on the interests and areas of expertise of the researchers rather than on the needs of farmers, especially farmers in the food insecure areas. Only one of the centers (Sirinka) is located in a food insecure area, which further limits contact with farmers in these priority areas. The Kobo substation, which is associated with Sirinka, is also located in a dry, food insecure area and is an ideal location for dryland research. It is remote and isolated, however, and is currently understaffed and underutilized.

The Sirinka Agricultural Research Center (SARC) was founded in 1987 and is responsible for research in four zones: North and South Wollo, Oromia, and Waghimra. In the past Sirinka's research (and that of the other research centers) was linked to the BoA's extension system via the Research and Extension Liaison Committee (RELC). This committee was made up of

researchers from EARO, the regional research centers, and BoA experts from the zonal and district levels. The committee met once a year to discuss ongoing research and for field visits. Attendance was voluntary and the committee had no budget. The RELC system, with one meeting per year, did not allow adequate input from the farmers or BoA extension staff and is being replaced by another organization, the Research, Extension, and Farmer Liaison Council (REFLC). Nevertheless, it is too early to determine if this new committee, which will include some farmers, will bridge the gap between researchers and farmers.

b. Conclusions

The linkage between the research system, the BoA, and the farmers in Amhara Region, and in the food insecure areas in particular, is not adequate. Only one of the three research centers (Sirinka) in the ANRS is located in a food insecure area. Agricultural research appears to be supply driven and has tended to be concentrated on the higher rainfall, higher production areas of the region.

2. Farmers and Research Priorities

a. Findings

In general, farmer's views concerning the problems they face are built on hard reality. Rural people do not necessarily know how to solve their many problems, but they do have a good understanding of the nature of their problems. The real problem in the food insecure districts is that farmers cannot feed their families year-round with what they produce. Farmers in South Gondar indicated that in a good year they are able to grow enough food for about six months. In Waghimra, traditional grain crops produce food for only about three months of the year.

Discussions with farmers have revealed a historical perspective on many of the causes associated with their inability to produce enough food. Farmers have indicated that in their lifetime a number of changes have occurred, including a decrease in the regularity and length of both the belg (short) and meher (long) rainy seasons, a reduction in the area covered by natural forests, soil loss due to erosion, decreasing land size, and a general reduction in the productivity of their lands.

Farmers are also astute judges of the overall success of the grain packages that have been promoted by the BoA as a solution to their inability to produce enough grain. The grain packages were first introduced in 1995 and for the first few years were fairly successful. The sale of fertilizer and improved seed increased in a number of the food insecure districts through 1996 because of the temporary success of the packages. However, participation in the grain packages has been declining since that time. A DA from the South Gondar Zone who serves approximately 900 households had 147, 71, and 39 farmers use the improved wheat package in 1997, 1998, and 1999, respectively. The farmers' declining interest in the wheat package is due to harsh economic reality; it does not pay to invest in the expensive wheat package because rainfall has been too erratic and not sufficient for the production of a successful harvest. DAs in the Waghimra Zone have had a very difficult time convincing farmers to use the grain packages. Last year, a DA serving 700 households there found only six farmers who were interested in using a grain package for the coming year for the same reason.

b. Conclusions

Farmers' views on their situation and the causes of their inability to produce enough food are based on economic reality. Farmers have a long-term historical perspective on the development of this problem and have developed a good understanding of the practicality of current attempts to solve the problem through improved seed and fertilizer packages. They are looking for new solutions because they are aware that the current extension packages do not consistently work in their local situations.

3. Priority Problems Of Rural Households

a. Findings

i. Introduction

Nearly 90 percent of the households in the Amhara Region are located in rural areas. This rural population is therefore estimated at approximately 14,600,000 people. According to the 1997/98 Agricultural Sample Survey, 21 percent of the households only had access to cropland, two percent owned only livestock, and 77 percent owned livestock and had access to cropland. Approximately 2,264,370 (84 percent) of the livestock owners are male, while 438,850 (16 percent) of the females owned livestock in their own right. Oxen are still the main means by which land is plowed in the rural areas of Amhara. Since not all households own a pair of oxen, many farmers are unable to prepare their land in a timely manner that would assist in maximizing their productivity.

Additional problems facing rural households include limited access to roads and potable water. Only 22 percent of the population in the region had access to all weather roads, while 18 percent of the population had access to potable water. Overall, the rate of illiteracy in Ethiopia is high at an estimated 68 percent. This high rate of illiteracy implies that many rural inhabitants lack employable skills, hence they are limited to farming as a source of livelihood. In the Amhara Region, the 1996/97 Statistical Abstract indicates that the primary school participation rate was only 27 percent. All these problems contribute to food and income insecurity in the region.

Due to recurrent drought, land degradation, and high population pressure on the land, many households in the Amhara Region are unable to meet their nutritional requirements. Both the quality and quantity of food is inadequate. Recent studies indicate that protein-energy malnutrition, vitamin A deficiency, and iodine deficiency is widespread in the region[12]. In 1999, the percentage of children in the region that were stunted (60 percent), underweight (52 percent) and wasted (10 percent), were among the highest in all of Ethiopia. The poor nutritional status of households in the region can be attributed to low food production, low household income, a lack of adequate health care facilities, and low levels of education and nutritional knowledge among women[13]. The consequences of malnutrition continue from generation to generation in a vicious circle, with malnourished children developing into malnourished adults whose cognitive,

[12] Gemembo, 1999; Central Statistical Authority, 1999.
[13] Gemembo, 1999.

productive, and reproductive capacities are compromised. It is therefore critical to address the problem of household food insecurity in order to break this vicious circle.

ii. Rural Households in Drought-Prone Areas

In the drought-prone and food insecure areas, the agricultural extension system has not been adequately responsive to farmers' needs. Farmers have continued to request crop varieties suited to their agro-climatic conditions, particularly drought-resistant crop varieties, yet few such varieties have been developed or disseminated. Even in cases where drought-resistant varieties are available, for example in sorghum, wheat, and teff, their success has been limited in the most drought-prone areas like Waghimra. When farmers use a particular technology package, and it fails, they become wary of new technologies and are unwilling to try them given the risks—both in terms of being unable to meet their household food needs, and the loss of household assets when the returns from adoption are insufficient to cover input credit costs.

In addition to the dearth of appropriate technology packages, the extension system is often unable to deliver inputs (seed and fertilizer) to the farmers in a timely manner. In some cases, farmers reported that they had requested certain packages, but when planting time came, the available supply was inadequate to meet their needs. This inefficiency of input delivery results in lowering farmer's productivity when they have to resort to alternative varieties. At the same time, the DA who submits the input requests to the Extension Service becomes the target of resentment from those farmers who had planned on using the package, but were not able to obtain the necessary inputs. The credibility of the extension agent is therefore diminished.

iii. Problems Facing Rural Women

Women comprise approximately 50 percent of the rural Amhara population, or over seven million people. As in other parts of Ethiopia, Amhara women are active in both the rural and urban economy. In rural areas where the main occupation is agriculture, women are rarely considered as farmers in their own right. As noted in the Comitato Internazionale Per Lo Sviluppo Dei Popli (CISP) study,

> …throughout Ethiopia, both within government bureaus and communities, the term 'farmer' is used synonymously with the word for 'man'. It is clear that whether rural women contribute to the process of agricultural production to a greater or lesser extent, they are generally perceived as marginal players, particularly by those individuals with significant influence on development activities such as bureau heads, DAs, and peasant associations. (p.8 CISP, 1997).

Women play both productive and reproductive roles within households. Not only do they participate in farming activities, they have the primary responsibility for food preparation, childcare, and the collection of water and firewood. The lack of childcare facilities limits a woman's ability to engage in income generating activities away from the home. Young girls also drop out of school to take care of younger siblings at a higher rate than do boys.

In 1992, a study by the MoA found that in the Amhara Region, women participate jointly with men in many activities on the farm. In land preparation, they clear the fields and bring food to men who plow the fields. Women also transport seed to the fields and participate in furrowing, planting, weeding, harvesting, and post-harvest activities. In many cases, grain storage and food preparation are primarily the responsibility of women. Without appropriate post-harvest technologies, food losses occur during storage, while the household's nutrition is diminished when women lack the knowledge, skills, and/or technologies to prepare wholesome diets. Post-harvest food losses therefore limit the household's ability to attain food security.

Although men and women in rural households participate jointly in many of the agricultural activities, they tend to have relative autonomy in some of them. For example, in our interviews with farmers and BoA extension system employees, most indicated that women, both in male and female-headed households, participate in home gardening and in the production of small livestock including sheep, goats, and poultry. As a result of the dual role played by women, most tend to prefer activities that they can engage in within, or close to, the homestead. Although packages have been developed for some of these activities, the BoA is often unable to fulfill the demand for inputs including seed, fertilizer, and animals. Additionally, since women, particularly those in female-headed households, are generally among the poorest of farmers, they are often too poor to afford the inputs necessary for optimum productivity even when inputs are available. Among these poorest farm households, those that have access to land often lack oxen to plow it. They therefore lease out their land to landless and other individuals and share the harvest, usually on a 50:50 basis.

iv. Gender Issues in the ANRS Agricultural Extension System

The number of women currently serving in the extension system of the Amhara Region is generally very small. Although during 1998 and 2000, 18 percent and 24 percent, respectively, of the DAs in the region were female, this was at a time when the Home Agent program of the BoA had been suspended and many Home Agents were reassigned as DAs. During the same period, the percentage of female supervisors was approximately three percent while the data for SMSs was not gender disaggregated[14]. DAs are assigned to *kebeles* without consideration as to their gender. Given the cultural constraints inhibiting the interaction of men and women, female farmers both in male and female-headed households are most likely marginalized from the extension system since female DAs are not specifically assigned to serve them. In Adet, for example, there are 7,735 (or 15 percent) female-headed households. It is unlikely that many of these households were contacted by DAs.

In addition to the lack of women serving in the Extension Service, the primary objective of the Amhara extension system is the dissemination of technology packages. As indicated by both the DAs and senior BoA officials, DAs receive a bonus each year based on the number of farmers adopting technology packages. When inputs are limited in supply, women receive lower priority than their male counterparts[15]. This is because women are generally not perceived to be farmers or are poor and live in remote locations. Given that DAs are evaluated based on the number of technology packages they are able to successfully disseminate, the DAs are more likely to focus

[14] BoA, June 2000.
[15] CISP, 1997.

their efforts of the relatively well-to-do farmers. This would therefore limit women's access to resources including credit, fertilizer, and improved seed.

v. The Role of Women's Organizations in the Delivery of Extension Services

The Women's Affairs Bureau

The Women's Affairs Bureau is the government agency mandated to coordinate all gender-related developmental activities in the region. It has 22 staff members stationed at the regional headquarters with no officers at the zonal or lower administrative levels. Its main activities include fund-raising for gender programs, conducting baseline socio-economic surveys and working with development programs to ensure that they are gender sensitive in their implementation. The Bureau also provides information to the other bureaus in the region to enable them to make their programs more sensitive to women's needs.

With respect to the current delivery of extension services to women the Bureau recognizes the need to enhance the position of women within the extension system of the BoA and applauds Winrock International's current program for training women extension agents at the diploma and degree levels. Training for women is also needed at the DA and SMS levels and the Bureau would like to provide gender training of all the extension officials to enable them to better support the needs of women in the extension service and rural farmers.

Because of the dearth of staff and material resources, the bureau does not execute many grassroots projects directly. Instead it relies on other institutions for example the Amhara Women's Association and donor agencies to implement projects. However, the bureau serves the critical function of harmonizing gender activities in the region as well as sensitizing other bureaus of the needs of women.

The Amhara Women's Association

The Amhara Women's Association (AWA) is a regional NGO that currently has 360,000 members, mostly rural women. It has 10 zonal offices and is currently working in 96 districts in the Amhara region. Main source of funding for the association is membership fees, although it does seek and accept donations from other sources. Rural members contribute 3Birr/year, while those in the urban areas contribute a slightly higher amount according to their ability. The association works through its members many of who volunteer time and services for the association.

AWA's goal it to enhance women's social and economic well-being by alleviating the three main constraints that women face, namely, lack of skills, a burdensome household workload, and social and cultural limitations. In addressing women's lack of skills, AWA provides training in literacy, business and money management, saving, accessing and using credit, as well as strategies in marketing their products.

In collaboration with ACSI, AWA trains members in credit application and management, encouraging them to invest in income-generating activities rather than spend loans on consumption goods. AWA acts as the loan guarantor for its members who form groups of 10-12

for the purpose of obtaining and managing loans. Most women use loans to finance for petty trading in vegetables, grains, baked foods, local brew, and fattening of sheep and goats. These activities enable the women to generate income while staying close to their homesteads to attend to other household chores. Some women use the loans to purchase oxen, though this occurs rarely due to the high financial risk involved.

In a recent regional land redistribution effort, according to AWA's General Secretary Tewabech Taye, 129,000 female heads have been accorded land-use rights. The association is training these women in understanding and exercising their land rights and helping them obtain business loans from ACSI for the enhancement of household incomes. Some of the women are renting out their land and using the money to set up small rural trading businesses. Others have obtained loans for the purchase of oxen, which they then use to work the fields, often with the help of a hired male hand. . Promotion of smaller ploughs that can be manipulated by women, such as those used in parts of India, would benefit women greatly.

Another of AWA's goals is to ease the workload of rural women by encouraging the production and use of timesaving household technologies. Both AWA and the Women's Affairs Bureau emphasized the need to promote technologies that could be produced and maintained using locally available materials. AWA members are currently being trained to make, market and use improved stoves and ovens which save both fuel and time in food preparation. Post harvest losses are also a major concern. For example, during last peak harvest season for potatoes, the price fell as low as 2 Birr per quintile in some areas. Without storage technologies, producers flood the market and are often unable to even recoup their production costs. Similar losses occur with other vegetables and grain crops. AWA would like to support the production and marketing of appropriate post-harvest technologies including increasing the number of rural grain mills, however, the association currently lacks the resources for these activities.

Both the Women's Affairs Bureau and AWA recommended conducting skills training for women at the township (kebele) level using mobile training centers which are more likely to meet women closer to their homes. Providing of rural childcare centers would also release more women to attend training programs. Additionally, to reach more rural women, AWA has initiated a daily hour-long radio program discussing women's issues. Although radios are only available at the district level, with few if any at the township or village levels, this is an important initiative.

Women in male-headed households have different needs from women who are household heads. Women in male-headed households are hard to reach. They generally do not attend meetings; instead their husbands attend. Women in these households need training in negotiating with their husbands to enable them to participate in development activities autonomously. Notwithstanding cultural constraints, women in male-headed households have one main advantage in that they generally have access to land as well as the support of their husbands in using oxen for land preparation. Households headed by women are among the poorest and most in need of assistance.

AWA conducts training to develop rural women's awareness of their legal rights and responsibilities. Currently, 197 rural women leaders have been trained in this sphere.

The kebele (township) administration in some cases provides support for gender training of men. In North and South Wollo where AWA has been working for a long time, the attitude of men, even in the kebele administration has significantly improved. In East Gojjam, on the other hand, both men and women are more resistant to change and the participation rate of women in development activities is much lower than in the North and South Wollo zones. In view of the many cultural barriers limiting women's participation in mixed gender development activities, AWA would like to promote women-only training programs as well as cooperatives.

b. Conclusions

Rural households face a broad range of problems, not all of which can be addressed through the agricultural extension system. The extension system in the ANRS is currently focused on the dissemination of technology packages. While this is an important strategy for alleviating household food and economic insecurity in the region, it is hardly adequate. Although a large percentage of households own both livestock and cropland, land holdings are relatively small, fragmented, and under increasing population pressure. It is not uncommon for a household to hold several plots of land in different locations, making it difficult to manage the plots and produce food crops efficiently.

Female-headed households are a particularly vulnerable group. In light of prevailing social and cultural constraints on the interaction of men and women, the lack of a clear strategy by the BoA's extension system for targeting female farmers in general, and female-headed households in particular, limits the extension system's ability to reach this group. Female-headed households also lack alternative productive resources that would enable them to improve household food security. Households in the drought-prone area of the Amhara Region need strategies for decreasing their dependence on crop and livestock agricultural activities to meet their household food and income needs. Most of the land is highly degraded and hence its agricultural potential is limited. In order to diversify, members of rural households need off-farm skills and access to markets. In many cases rural farm household members have few marketable skills and live in remote locations. These are issues that cannot be addressed by the extension system, but nevertheless affect the ability of rural households to attain food and income security.

The ANRS has among the highest rates of protein-energy malnutrition, vitamin A deficiency, and iodine deficiency in Ethiopia. The effects of these nutritional deficiencies are likely to be felt for many generations unless household health and nutritional needs are addressed and the vicious circle of deprivation and low productivity is broken.

D. CAPABILITIES OF TRAINING FACILITIES AND PROGRAMS

1. Formal Training (Certificate and Diploma Levels)

a. Findings

The Amhara Agricultural Extension system trains its DAs at three training centers located in the region. One is located at Woreta, 60 km outside of Bahir Dar, another 22 km outside of Desie at Kambolcha, and the third at Merto Lemariam in East Gojjam approximately 150 km from Bahir Dar.

By way of example, the Woreta Training Center has a capacity for 150 students, but has trained up to 500 at a time as part of a crash training program. In the last three years it has trained approximately 2,400 assistant DAs. Trainees are drawn from all districts throughout the Amhara Region. The curriculum is uniform, regardless of the specific needs of the various districts. Trainees, who become Assistant DAs on graduation, take 16 subjects (which include the 84 technological packages mentioned above) spread over a six to nine month period, receiving a Certificate at the completion of their training. The content of the curriculum is decided by the BoA's Planning and Training Office (PTO), and is approved by the Regional Council. The PTO also monitors the examinations of the students at the end of the training cycle. Additionally, students receive limited practical training at the Adet Research Center, with the training center providing bus transportation. The Center also has the use of 120 ha of land and is giving consideration to using some of this space for demonstrations and students' experiments.

The agricultural training centers in the Amhara Region suffer from a number of serious constraints, all of which hamper the capacity of the Extension Service. The present physical facilities are inadequate both in quality and in their capacity for expansion. The teaching staff of the Training Centers are nonresidential, adjunct faculty, with most holding Diplomas and B.A.s and with a few holding M.S. degrees. Most teach for five to ten days at a time, commuting from their places of residence to teach their courses.

The curriculum is heavily oriented to teaching basic subject matters, such as agronomy and other agricultural sciences, and does not provide training in the participatory extension skills needed to work as trainers or as learning facilitators for farmers. Additionally, trainees are not provided with an understanding of the economic implications of the different technology packages. This element is also not included in the SIDA redesigned curriculum, as described below.

The curriculum of the Woreta Center has recently been redesigned, based on a Swedish (SIDA) training needs assessment and future support program[16], although it has yet to be implemented. The revised curriculum will be expanded and improved in order to upgrade the Center to the level of an agricultural college offering two-year, post-high school Diplomas. The Certificate training program for Assistant DAs would be eliminated in an effort to upgrade the quality of Extension Service workers. At the same time, the Kambolcha Center will be used to upgrade current Certificate holders to the Diploma level, provide short courses to DAs in dryland

[16] Curriculum in General Agriculture for Diploma Program, SIDA, January 1999.

agriculture for the food insecure areas, and also be used as a farmer training center. The Merto Lemariam Center will be converted into a farmer training center as well.

Following the SIDA-sponsored training needs assessment, a regional conference on curriculum reform was held at the Center in April of 1999. At this conference, staff from the Center, the BoA, and other stakeholders reviewed the revised curriculum and discussed how to expand the quantity and quality of both formal and in-service training. As a result, the proposed new curriculum includes specific behavioral learning objectives for each course. These behavioral objectives are benchmarks that will enable staff to more accurately assess the knowledge, skills, and attitudes achieved by the students in each of the courses.

Part of the SIDA support program would include the placement of an expatriate curriculum improvement expert at the Woreta Center. Additionally, a new building, plus faculty housing, has also been designed with SIDA assistance. This new facility will have capacity for training 750 students at a time. The total cost estimate for this construction, according to a spokesman at the Swedish embassy, is approximately US$ 6.0 million. SIDA funding is presently pending a response from the regional government on its plans for the management and maintenance of this new facility. SIDA is also seeking cofinancing from another donor for the construction costs of the new buildings.

b. Conclusions

Formal training for DAs is currently in a process of transition. This transition includes an upgrading of facilities, a revision of curriculum, and a reorientation of the roles of the three training centers. SIDA has been the principal donor behind this transition and is currently seeking the support of other donors in order to implement the plans that have been agreed to by the BoA.

2. In-Service Non-Formal Training

a. Findings

The PTO is authorized to set training objectives and to establish training curriculum guidelines for in-service training in the zones and districts. The in-service training guidelines or curricula, whenever they are developed or revised, must be submitted to the Regional State Council (RSC) for approval. The PTO is composed of three staff members who are agricultural scientists trained to the B.S. and M.S. levels. Only one, the Training Specialist, has attended a course at the National Institute of Management on training methodologies.

The PTO generally does not implement courses on its own, but occasionally coordinates management development courses offered by other institutions. Additionally, the PTO does not have an annual strategic training plan, nor does it provide assistance to the zonal and district offices in preparing their annual training plans.

The current BoA policy mandate on training at the zonal and district levels only specifies that these offices are to make a training plan and request funding sufficient to organize and conduct training sessions four times a year. This policy guideline does not specify either the length or the

type of training to be carried out. Decisions on these matters are left to the zones and districts. Finally, there is apparently little or no monitoring or evaluation of the zonal and district training activities by the Bureau.

In-service training given throughout the region is either generally arranged to be given "in-house", i.e., by the BoA zonal or district SMSs/Experts, or is given by international NGOs such as PACT who assist local NGOs such as the Amhara Development Association (ADA) to develop and implement training courses throughout the region. SIDA, for instance, funds in-service training for BoA staff in the 16 districts where it is working.

When asked about the effectiveness of the "in-house" workshops given by the zonal and/or districts staff, a number of DAs reported that they found that the workshops were either information collection discussions or, when structured, were repetitious and included materials on extension packages with which they were already familiar. It also appears that there was little effort to modify the training content to fit the needs of the food deficit areas, e.g., by focusing on issues of particular relevance and interest to farmers in the dryland areas.

The zonal offices do not have a budget line item for training and consequently use their per diem account to pay training costs. Since most workshops are only for one or two days, these costs are not high. Transportation costs, e.g. horse or mule rental, are also reimbursed to participants who attend the workshops.

Lastly, in the past, the United Nations Development Program (UNDP) has provided assistance to agriculture in Amhara in the form of planning and training programs. This assistance, which is coordinated through MoA, has concentrated on six components:

- farmer training on research and extension approaches to both crop production and animal husbandry;
- agricultural project planning training for staff of the BoA;
- irrigation schemes, including soil and water conservation including two bulldozers used for irrigation demonstrations with participants;
- post-harvest losses training for farmers;
- cooperatives/credit society formation and management training; and
- overseas study tours for three BoA senior staff to Thailand.

b. Conclusions

The PTO does not have the capacity to exercise all of the opportunities available for supporting in-service learning needs through a strengthening of the training provided at the zonal and district levels of the extension system.

The zones and districts do not get assistance from the PTO in planning, budgeting, implementing, or evaluating their workshops and short courses. The PTO's mandate does allow it to expand beyond its current activities and require the zones and districts to conduct additional in-service training. It also has the mandate to develop curricula and could assist zonal and district staff to develop and implement courses directed at local needs, but does not do so.

CHAPTER 5
ISSUES AND RECOMMENDATIONS

A. INTRODUCTION

The Issues and Recommendations to follow are divided into three categories: Food Security, the an overarching concern that is the driving force behind virtually all of the other issues; the BoA's Extension Service and its dissemination of technology information; and other related support services that together with agricultural extension, form the extension system of the Amhara region, especially as it relates to food security.

B. FOOD INSECURITY AND HOUSEHOLD WELL-BEING

1. Issues

One of the Strategic Objectives (SO3) of the USAID program in the ANRS is to support the region's various bureaus and agencies in addressing rural household production and productivity particularly among the 48 food insecure districts. Nevertheless, in the past a majority of the development apparatus of the region, not to mention the national government, has been directed at increasing agricultural production and productivity in general, rather than being directed at the food insecure areas, the relatively poorer segments of society, and issues of nonagricultural income generation. This has necessarily meant that emphasis in both agricultural research and extension was placed on the higher rainfall, more productive areas where a greater return on the government's investment resources could be realized. Given the scarce resources of the government this was a rational decision at that time.

Over time, however, this strategy tended to create a wider division between the "haves" and the "have-nots". While the vast majority of rural Ethiopians are poor, those living in the lower rainfall and highly degraded areas of the country, and especially in the Amhara Region, are extremely poor. The majority in this region are unable to produce enough food to feed their families during much of the year and few have income generating alternatives to this below subsistence agriculture. This has led to what some have called a "culture of drought" and a perennial dependency on outside assistance merely to stay alive.

In the case of both agricultural research and agricultural extension in particular, this has meant that the agricultural technologies, the supply of agricultural inputs, and even the marketing of agricultural surpluses have been skewed towards those areas best able to take advantage of these services. On the other hand, nonagricultural, off-farm income and employment generation has received a low developmental priority mainly targeted at the few urban populations existing in the region.

Lastly, the active participation of government in many activities that deal with farmers and non-farmers alike has effectively precluded the entry of private individuals, and the private sector in general, particularly into the agricultural sector. Whether this is due to a throwback to the socialism of past governments or paternalism in current thinking, it leads to inefficiencies and the misallocation of resources. Granted, the levels of extreme poverty in the food insecure parts of the region do not make it attractive for private sector profit seekers to enter the sector; with

fertilizer supply being one important example. Nevertheless, government ownership or control of everything from radio stations (which could provide rural, isolated rural households with much needed information), to technology and seed multiplication centers (which produce the wrong commodities in the wrong amounts), to transportation services (which are woefully inadequate even for the meager demand in the food insecure areas), to the government ownership of all land (which stifles investments for land improvement or conservation measures on the part of farmers) all result in a stagnant economy that does not have a place in the twenty-first century.

2. Recommendations

In coordination with the FSU, the BoA, the agricultural research centers, and other line bureaus and development agencies need to adjust their priorities to include the food insecure areas of the region. This must include research on new practices, either from inside the country, from neighboring countries, and elsewhere including drought resistant crops and technologies, land management practices, and nontraditional sources of on-farm and off-farm income. Once these new practices have been identified, they must be extended to rural households through the various extension mechanisms using more effective and efficient methodologies, as well as through NGOs, donors and others. Meanwhile, as these new practices are identified, the various outreach organizations should begin to alter their current technologies and service delivery mechanisms to address the food insecure areas through more appropriate training, the use of cooperatives or other farmer organizations, and the use of women's organizations, as well as through a closer linkage between government, NGOs and donors.

Wherever and whenever possible, the government should endeavor to divest itself of activities that can be undertaken by private individuals or companies. Indeed, where deemed necessary, some levels of subsidies should be considered to promote or entice the private sector to offer services and commodities in the food insecure areas, and then be gradually phased out over time

C. THE BoA EXTENSION SERVICE

1. Structure, Capabilities, and Resources

a. Issues

The structure of the Extension Service of the Amhara BoA; DAs, Supervisors, SMSs/Experts at the functional level, and *kabeles*, districts, zones, and region, at the administrative level appear to be adequate for the mandate of the extension system as it has been in the past. Nevertheless, with the creation of the FSU and the shift in focus on the part of the Regional Council, the Bureau, and the development community in general to include the food insecure areas of the region, the structure has become inadequate.

Additionally, and as was presented above in Section B., the Extension Service at the technical level is organized into disciplinary teams such as crop production, livestock, natural resources, etc. This was appropriate when the mandate of the Extension Service was primarily directed at the relatively high rainfall, high production areas of the region. However, now that their mandate has been expanded to include the dry, food insecure areas of the region this disciplinary approach has proven to be inadequate for those areas.

This disciplinary orientation of the Extension Service is also manifested in the capabilities demonstrated by the service that can best be described as being supply driven by what its staff is most familiar with and what it can currently do best, as opposed to what is being demanded by farmers; particularly in the dry, food insecure districts. This supply driven approach begins with the training received by extension workers at all levels and will be discussed in detail as a separate issue below.

The resources allocated to the Extension Service are quite meager given the enormity of the mandate given to it, and it does appear that an attempt is being made to use those resources in the most efficient manner possible. Nevertheless, the question must be asked if the resources spent on certain regulatory functions, as well as on technology multiplication activities by the BoA in general could not better be used by the Extension Service. Additionally, the Extension Service is currently using the demonstration farmer/copy farmer methodology in an attempt to maximize the number of farmers reached by its staff. While this approach is no doubt better than the one-to-one extension agent to farmer methodology used in the past, the use of paraprofessionals that has been proven to be successful in other developing countries, is not currently being employed.

Additionally, as was discussed earlier, the salary levels of extension staff are extremely low throughout the region. What is even more onerous, however, is that they are also uniform throughout the region. No provision is made for the relative difficulty in promoting improved agricultural technologies in the food insecure districts, nor is any made for the relative isolation or hardships encountered by extension workers in either the food secure or insecure districts. This lack of incentives has a very negative effect on staff morale and staffing patterns in the more remote, difficult districts.

Lastly, the current DA to farmer ratios prevalent in Amhara are far too high for the DAs to be effective in their work. The BoA is currently attempting to lower these ratios to the 1:500-600 range as more and more DAs are trained. This is still too high, especially given the terrain and distances that the DAs must travel. Experience in other countries has shown that ratios of 1:50-60 are reasonable, but the region lacks the resources necessary to attain them. These ratios are probably not the best indicators of a DA's workload or achievement rate. Factors such as the geographic areas covered, past contact with farmers who have adopted technologies promoted by DAs, and the value added of adopted technologies must also be taken into account.

b. Recommendations

The technical teams of the Extension Service should be reorganized to reflect the realities and priorities of the Amhara Region. This means that instead of a disciplinary approach, the technical staff should be reorganized according to the agro-ecological conditions existing in the region. A preliminary division might include three teams: high rainfall, low rainfall, and dryland farming/natural resource management. The high rainfall team could be composed of experts in field crops (grains and pulses), horticulture, livestock, soil conservation, and post-harvest issues—all of whom are versed in the technologies currently being promoted by the BoA. The low rainfall team could be composed of similar experts with the possible inclusion of irrigation and water harvesting; however, they should be trained and specialized in low rainfall cropping and livestock methods and technologies. The dryland/natural resource team could be composed

of experts in agro-forestry and agro-pastoral issues, irrigated horticultural crops, and community-based natural resource management. All teams should also contain Home Agents to deal with issues of family nutrition and other issues normally dealt with by women.

Salary differential payments should be offered to those extension staff that work in the food insecure districts with increasing payments depending on the remoteness of their assigned sites and the availability of modern amenities.

The current DA to farmer ratios existing in the region are too high and must be lowered, budget and manpower availability permitting. Nevertheless, other, more goal-oriented factors must be taken into consideration when establishing these ratios as targets. Related to this and to the overall workload of the DAs, they should not be considered 'multipurpose' agents of change, but rather agriculture specific, and to the extent possible for those working in the 48 food insecure districts, specialists in dryland farming and livestock production.

In order to enhance the efficiency of the DAs, the use of paraprofessionals should be attempted on a pilot basis in selected *gottes* and *kebeles*. They should be paid a small sum to assist their neighbors in improving their agricultural practices. In other countries paraprofessionals are used as a link between farmers and extension agents with the paraprofessional to farmer ratio being 1:10 or 1:20 depending on the locality. In some cases they are paid in-kind with fertilizer, improved seed, agricultural implements, or improved breeding stock. Competitions between paraprofessionals and their respective *gottes* or *kebeles* with those achieving the best results being awarded with bags of fertilizer, improved seed, or livestock have been used in other countries to great success and could also be attempted.

Other methodologies to help DAs work more efficiently with farmers should be attempted. These might include radio programs on a broad range of topics pertaining to rural life and the development and dissemination of resource materials directed at farm households. The use of radio programming to convey technical material has been used successfully in both developed and developing countries for many years and could also be employed in Amhara as well. Part of SIDA's assistance has been to support the BoA in the establishment of Radio Amhara, but this assistance needs to be consolidated, regularized, and perhaps privatized. Additionally, two other factors would need to be overcome if technical radio programming is to become an effective extension tool; a generalized lack of radios (not to mention batteries to power them) in rural areas due to extreme levels of poverty, and an almost universal lack of electricity at the *gotte* and *kebele* levels. These problems could potentially be overcome by the provision of solar-powered radios to DAs who could use them for their own use, as well as in conjunction with farmer training sessions at specific times when scheduled technical programming is being broadcast.

Technical resource materials related to the 84 technical packages in the form of pamphlets and brochures have been prepared for use by SMSs/Experts, Supervisors, and DAs through support from SIDA and other donors. Nevertheless, a majority of these materials are not appropriate for the food insecure areas and additional resources are needed to print new, more appropriate materials as well as additional copies of the current materials. Additionally, technical materials need to be designed for use by farmers, many of who are illiterate.

Lastly, and most importantly, the entire Extension Service should be 'demand driven', based on the priorities articulated by farmers, and offer technological options or alternatives that would enable farmers to make more informed choices. This demand-driven focus, however, should not be viewed as a paternalistic, subsidized, relief program where services, inputs, or credit are simply given away.

2. Training

a. Issue

The assessment team supports the current transitional process concerning the focus and use of the region's agricultural training centers. This includes abandoning the Certificate program at both Woreta and Kambolcha, upgrading Woreta to a two-year, Diploma granting college, and converting Kambolcha into a center that upgrades current Certificate holders to the Diploma level, and trains DAs working in the food insecure districts, as well as farmers from those districts, in dryland technologies.

b. Recommendations

i. Formal Training

Turning specifically to Woreta, the new curriculum for that center should be adopted through the formal approval process used by the Regional Council. Training subject units should be developed, tested, and evaluated using current extension staff as participants and using local and international NGOs experienced with training in food insecure areas, before being introduced into the Diploma curriculum.

All training subject units will need written objectives. This will require indicators of new, learned knowledge which students will be expected to demonstrate as a result of the training. Evaluation of all training units should be tested against the objectives that have been agreed on by BoA decision makers. The evaluation process should include the trainees, staff, and farmers as well. Senior staff of the BoA should be involved as trainers and as lecturers, and should act as evaluators of the content and methodology used in the training. They should also be involved in final sessions of training programs to receive feedback from trainees.

The training curriculum should give more attention to the role of the DAs as facilitators of learning needed by farmers. DAs as well as SMSs should be given skills in assessing training needs and should have the ability to design and implement participatory training programs with farmers that would help them improve agricultural productivity.

Skills in understanding the cost-benefit analysis of the various packages are also needed by DAs in order to be increasingly able to advise farmers on the economic implications of accepting the terms of credit associated with the technology packages. Additionally, trainees will also need workbooks with reference materials, printed lecture notes, and learning exercises that can be used in the field when working with farmers.

The BoA is committed to using Home Agents as SMSs and Experts at the zonal and district levels. Recent discussions have also indicated that Home Agents will be assigned to some *kebeles*. These Home Agents would be most effective if obtained from within the ranks of the female DAs who are already familiar with the problems of rural households. Home Agents working at the *kebele* level will need to be trained to the Diploma level as well. A Home Agent curriculum will therefore have to be designed for the Woreta and/or Kambolcha Training Centers. In the meantime, female DAs should be upgraded to the Diploma Home Agent level at Awassa University that already has a program of this type.

Lastly, the Diploma program at Woreta should place particular emphasis on practical, hands-on learning that combines classroom instruction with actual field work where the theoretical information provided is demonstrated on the land surrounding the training center. The best example of this type of agricultural education combining theory with practice is at the Pan-American Agricultural College in Zamorano, Honduras. A study tour by up to three BoA representatives to Zamorano is recommended.

ii. In-Service, Non-Formal Training

In-service training in planning, staff development, and training skills development should be considered as key elements in the institutional development of the BoA. To facilitate this, the PTO should consider merging with the Office of Communications, or at a minimum, a formal relationship should be established between the two offices.

The PTO should become increasingly focused on guiding the zones and districts on training matters, and should consider the importance of providing training policy priorities, particularly those aimed at the needs of the food deficit areas for learning about more relevant technology packages and natural resource management approaches. It should be involved in the monitoring and upgrading of both the skills in designing the content and the methodology of the training carried out by its extension staff. The PTO could also become more effective if it were able to design and implement a Strategic Training Action plan based on a flow of bottom-up needs from farmers combined with strategic priorities from the regional level.

Another important issue concerns the training of farmers, as well as farmer groups. The efficiency and cost/benefit effectiveness of the use of trained staff resources in the BoA in the transfer of knowledge, skills, and attitudes to farmers would no doubt be greatly enhanced if the farmers were to be trained in groups. The present demonstrations by extension workers do not qualify as training seminars; most farmers need a more thorough background in both the science and the technology of farming, especially as it relates to their particular agro-ecological zones.

In order to develop this capacity for increased farmer training, DAs and SMSs at zonal and district levels would benefit from the extension method of train-the-trainer courses. Some of the SMSs and Experts, once they become more proficient in assessing training needs and in designing and conducting participatory training, could in turn be used to train selected DAs on how to train farmers. Training of farmers should probably be a collaborative exercise involving SMSs, Experts, and DAs, at least until it is determined that selected DAs can perform this function satisfactorily. The SMSs and Experts should in any case be aware of the capacity for

farmer training possessed by individual DA trainers, some of whom will be better suited to be trainers than others.

Lastly, while the curriculum for the training of extension staff proposed in the SIDA training needs survey and conference is a considerable improvement over the existing curriculum, there are several important subjects that are lacking in both the formal and in-service training. These subjects include:

- training needs assessments, planning for training activities, and extension methodologies for farmers;
- training in the cost/benefit implications of the agricultural technology packages;
- training in the utilization of agricultural packages and environmental practices that are appropriate for the dryland farming areas; and
- training in behavioral skills and attitudes to establish the trust and confidence needed to be effective with farmers.

3. Relevance of Technology Packages

a. Appropriateness for Food Insecure Areas

i. Issues

Technology packages that increase cereal production have been successful in the more productive, high rainfall areas of the ANRS. Farmers in East and West Gojjam have been able to substantially increase their cereal harvests using the technological packages that rely on improved seed, fertilizer, and some pesticides. The BoA has placed a great deal of emphasis on these packages because of their success in the productive districts. Unfortunately, these packages have had only limited success in the food insecure areas; many farmers that took out loans to purchase the required inputs have had to sell livestock or other household assets in order to repay their loans because their harvests did not cover the amounts of the loans. As a result, many farmers in the more food insecure districts are losing interest in these extension packages.

In theory, the 84 technical packages (see Appendix A) provide a wide selection of alternatives for the farmer, but each package is designed with only a single option (one seed variety, one fertilizer dosage, one seeding rate, etc.). Drought resistant varieties of sorghum, teff, and wheat have been developed and tried. However, even these have not been successful on a regular basis in areas like Waghimra. Consequently, farmers are becoming more interested in alternative activities including horticultural crops, livestock, poultry, apiculture, and natural resource management. Little research or extension emphasis has been placed on the further development of these dryland alternatives at either the national or regional levels.

SARC, located in the North Wollo Zone, has the potential to be used to develop packages appropriate for food insecure areas. Most of the research conducted at Sirinka focuses on cereals, however, approximately 70 percent of the center's research concentrates on the development and testing of new grain varieties. The remaining 30 percent are spread among other disciplines including horticulture, agro-forestry, soil and water conservation, and animal fodder. A

concentrated effort is necessary to change the research emphasis to be more in line with the interests of farmers living in the food insecure areas. Sirinka-based researchers are beginning to conduct on-farm fertilizer trials for the cereal packages. While this on-farm research needs to be expanded to the disciplines of greater interest to farmers, available budget, manpower, and the location of the center limit SARC's capacity.

ii. Recommendations

Agricultural research in the Amhara Region needs to be redirected to the needs of the food insecure areas. One means of doing this would be to involve the SMSs at both the zonal and district levels in ongoing research at the research centers, particularly Sirinka and Kobo. These individuals may be more qualified to conduct research than the 'junior researchers' currently at the research centers. They are closer to the farmers and the DAs, and therefore have a better understanding of the farmers' interests and needs.

Once the research centers are fully integrated under the BoA and there is a unified management structure, a Researcher/SMS exchange program should be established. In such a program, junior researchers from the three research centers could be assigned to a district for a period of, perhaps, two years. The junior researchers would conduct applied on-farm research as determined by the Extension Service, the local farmers, and the research center. At the same time SMSs and Experts from the zones and districts would be assigned to the research centers for a similar period. Visiting SMSs would conduct pertinent research under the direction of a senior researcher. This exchange program would promote:

- the exchange of ideas and the development of relationships between the Extension Service, the research centers and the farmers;
- the development of the SMSs' applied research skills;
- practical rural and on-farm experience for the junior researchers; and
- on-farm research focused on the crops and varieties of interest to the farmers in food insecure areas.

Additionally, a three-month course on applied agricultural research methods should be created at the Woreta and Kambolcha training centers that would prepare selected SMSs to conduct applied on-farm research. After completing such a course, the SMSs would be better prepared to conduct applied research on farmers' fields.

Lastly, the addition of more options and flexibility to the 84 standard packages could make many of them more useful to farmers in the food insecure districts.

b. Technology Multiplication and Availability and Use of External Inputs

i. Issue

Many of the technological packages promoted by the BoA require the purchase and use of external, purchased inputs. These inputs include imported fertilizers; improved seed varieties, some of which are produced by the Ethiopian Seed Enterprise (ESE); imported vegetable seed;

and improved breeds of poultry and heifers that are produced at regional multiplication centers. These inputs are critical to a number of the BoA's most important packages, yet the lack of sufficient quantities of these inputs has proven to be a bottleneck restricting the adoption of the technological packages. The ANRS extension system cannot be effective if the inputs for the technological packages being promoted are not available.

Additionally, there is also a lack of information concerning the availability and existence of technologies and their varieties.

ii. Recommendations

The current seed and livestock multiplication activities in the region should be divested to individual farmers and to the private sector in general. This would be particularly relevant in the case of the growing of grain seed, tuber stock, and forage varieties, and in the rearing of improved breeds of livestock. The BoA would need to continue to be involved in the collection, certification, and storage of the seed, turbers, and grasses to assure quality standards. Likewise, the multiplication of improved breeds of livestock would also have to be monitored and regulated, but the actual rearing of the animals could be done by individual farmers. This would not only improve the efficiency of the multiplication system, but it would increase the income of farmers involved in the activity.

A technology information network should be established to connect the BoA to the MoA and sister institutions that have information on current available agricultural technology. Specific activities of this network would be to:

- establish ongoing contacts with national and international centers dealing with the research and development of appropriate agricultural technology;
- develop a system for the annual exchange of newly developed and approved varieties between the Ethiopian research institutions and the BoA; and
- develop an Internet capacity in the BoA with the purpose of downloading, duplicating, and distributing relevant information from the Internet. This new and relevant information would then be provided to SMSs in the zones and districts.

c. Fertilizer Use and Availability

i. Issues

The success of many of the BoA's technological packages depends on the use of fertilizer, which is generally purchased with credit. Fertilizer use in the ANRS has been increasing since 1995 when the BoA first introduced the SG 2000 model grain packages. Since 1995, fertilizer use has increased from 53,600 tons to 74,045 tons in 1999, a 35 percent increase[17]. Unfortunately, fertilizer has not been widely used in the food insecure districts due a reluctance on the part of farmers because of the risks associated with a lack of rainfall and the resulting potential of a fertilized crop to not cover the costs of the fertilizer. The proportion of districts using fertilizer

[17] BoA, 2000.

varies greatly among zones, from 91 percent of the districts in the productive West Gojjam zone to zero percent of the districts in the dry and food insecure Waghimra zone[18].

In 1998, the GMRP analyzed factors that influence the use of fertilizer in the ANRS's 105 districts. The use of fertilizer was positively correlated with annual rainfall, the number of oxen owned per household, membership in a service cooperative, access to markets, and to the number of fertilizer distribution centers—as these factors increased so did the use of fertilizer. All these factors are limited in the 48 food insecure districts. There the use of fertilizer was found to be negatively correlated with the percentage of households receiving food aid—as the percentage of households receiving food aid increased, the amount of fertilizer use decreased. These results indicate that fertilizer use is less likely to occur in the food insecure districts of Amhara. Much work needs to be done to provide alternatives to fertilizer and/or to make its use more practical in these food insecure districts.

Until 1992, the importation of fertilizer was entirely controlled by the Agricultural Input Supply Corporation, which is now the Agricultural Input Supply Enterprise (AISE), a parastatal organization. In 1992, the government allowed some liberalization of the market and there are now three suppliers of fertilizer in Amhara: AISE, Ambassel, which is partially owned by the regional Ethiopian Revolutionary Democratic Front (EPRDF) party, and Ethiopian Amalgamated Limited (EAL) a private company[19].

True competition is limited because the suppliers do not operate in all zones and some zones have only one supplier[20]. During the 1998/99 season, Ambassel provided over 75 percent of the fertilizer used in the region. This dominance can be put into perspective by comparing the fertilizer market in the ANRS with the market in Oromiya. There, the three major suppliers of fertilizer, AISE, EAL and Dinsho, had relatively equal market shares in 1997, with 37, 33 and 30 percent, respectively. The relative lack of competition may have contributed to some of the problems associated with fertilizer use in the ANRS; namely, late arrival of fertilizer, inadequate supplies in the more rural areas, and relatively high prices[21].

Lastly, it appears that the fertilizer dosages for the various technological packages are based on agronomic priorities of achieving maximum yields per unit of land rather than maximum income per unit of fertilizer that, in turn, would maximize income for the farmer[22].

ii. Recommendations

The further liberalization of the fertilizer market needs to be promoted and the private sector needs to be encouraged to stimulate competition. Also, technological packages that do not require imported chemical fertilizer need to be developed. Specifically:

[18] Grain Market Research Project (GMRP), 1998.
[19] Ibid.
[20] EAL has complained that the structure of the credit program favors Ambassel.
[21] Kuawab, 1995.
[22] For the economists reading this, the point where marginal costs equal marginal revenue has not been taken into consideration, rather maximum production has been used as the main evaluation criteria in recommending fertilizer dosages.

- further development and strengthening of service cooperatives and their unions to enhance their ability to buy and sell fertilizer to their members needs to be promoted; and
- research promoting the use of agricultural packages that do not require imported chemical fertilizer needs to be promoted.

d. Development of Small Scale Irrigation Systems

i. Issues

Traditional rain-fed agriculture is not producing the food necessary to feed the people in the 48 food insecure districts. Consequently, the BoA is promoting the development of irrigation projects with the hope of increasing household food security. Irrigation has a number of advantages: it allows crop diversification, which reduces the risk associated with traditional mono-cropping systems; high value crops are generally produced on irrigated lands, resulting in increased household income; and irrigation reduces the need for households to produce crops on marginal lands that are subject to environmental degradation.

The ANRS has emphasized small-scale irrigation systems that, so far, cover a total of less than 200 hectares. The types of systems used in ANRS include:

- diversion systems which regulate the flow of water to farmer's fields via a permanent diversion structure in a river bed,
- temporary diversion systems which use flood water in intermittent streams,
- spring systems which utilize water from small springs,
- storage systems which utilize structures to store water for periods of time, and
- lift systems that raise or pump water uphill to farm plots.

A number of small-scale irrigation systems have recently been constructed in the Amhara Region with mixed results. The storing and moving water in manmade structures is complicated, usually relatively expensive, and often contain many potential problems. These include:

- coverage areas that are much smaller than planned coverage,
- rapid silting of the reservoirs due to high levels of soil erosion in the watersheds,
- difficulties in operation and maintenance,
- erosion or sedimentation in the irrigation canals,
- poor water distribution, and
- loss of water in the reservoirs due to seepage.

ii. Recommendations

In addition to the current small-scale irrigation activities being practiced, foot-powered pumps should also be considered for certain conditions. These types of pumps have been used for many years to lift water in other developing countries. Numerous designs that use different construction materials exist. Depending on design, these pumps can lift water as high as nine meters, are portable, can be built locally, and are relatively inexpensive. Currently there are at least two models being tested in Ethiopia; one is manufactured at the Selam Children's Village in

Addis Ababa, and CARE International has imported another for testing. Both designs are simple and could be manufactured in the ANRS by private businesses.

The Selam model costs 500 Birr and is constructed of PVC pipe, concrete, and metal. At the cost of 500 Birr per pump, 500 foot-powered pumps could be manufactured for the cost of one capped spring system (at 250,000 Birr), or 2000 pumps could be produced for the cost of a small cement diversion system (at 1,000,000 Birr). The cost of a diversion system or capped spring system is a one-time expense borne by a donor, an NGO, or the government. In the case of the foot-powered pumps the expense would be borne by interested farmers who would purchase the locally manufactured pumps, thereby supporting the local economy.

4. Linkages Between Extension and Research

a. Issues

In stark contrast to other countries, developing or developed, agricultural research and agricultural extension in Ethiopia are not linked together through a common institutional framework. This is the case at both the national and regional levels. Rather, the Extension Service is under the MoA at the national level and under the BoA at the regional level. On the other hand, agricultural research at the national level is under the Prime Minister's Office, while the three centers in Amhara Region are currently autonomous units only nominally under the BoA.

While the reasons for this unusual separation of the two structures are beyond the scope of this assessment, the impact of their separation is a serious constraint to agricultural development at both the national and regional levels. In the past, attempts have been made to address this issue by trying to create a linkage. As such, RELC was formed at both the national and regional level. Composed of representatives from both the research and extension communities, these committees were voluntary organizations without budgetary support that met only once or twice per year. All people interviewed concerning the effectiveness of the RELCs admitted that they had not been effective.

Recently, as a response to this, Research, Extension, and Farmer Linkage Councils are being established at both the national and regional levels. EARO, on its part, has already established, funded, and staffed national and research center departments to this end. However, for the MoA and the regional BoAs, this step is in a transitional phase[23]. Once established by both the research and extension communities, these councils will be funded and staffed, and will bring together researchers, extension workers, and farmers on a regular basis to set priorities, evaluate progress, and coordinate overall activities jointly.

In the view of the assessment team, this appears to be a step in the right direction. Only time will tell if the councils will truly become effective. Without an institutional structure with a unified line of authority, any coordination will still be voluntary based on the goodwill of participants. The team also questions how farmers will be represented on the councils. Other than through

[23] In the case of Amhara Region, a Research Coordination Unit has recently been established and staffed, although it does not as yet appear on the BoA's organizational chart (see Figure 1).

farmer service cooperatives, farmers are not organized in any representative body and do not have the ability to speak with a unified voice. While the elected leaders of farmer cooperatives and their unions would be one possible answer in the future, farmer cooperatives are only operational in the western portion of Amhara Region and are either extremely weak or nonexistent in the eastern, food insecure areas.

Lastly, DAs currently carry out demonstration activities on farmers' fields in an attempt to disseminate new technologies. The results of these field demonstrations are then recorded and passed on up the extension system to, at least, the zonal level. Nevertheless, these activities are not considered research. As one zonal extension head stated, "We do not have the mandate to do research." As a result, the information collected from demonstration activities is lost to the agricultural development system, and another potential linkage between research and extension is lost.

b. Recommendations

The team supports the concept of establishing the Research, Extension, and Farmer Linkage Councils and encourages the MoA and regional BoAs, specifically of the Amhara Region, to carry through on their proposed mandate to establish, fund, and staff the Research Coordination Units. Additionally, the team supports the concept of bringing the three research centers in Amhara Region—Adet, Sheno, and Sirinka—under the official auspices of the BoA.

Furthermore, to assure farmer involvement in the linkage process, applied research activities should take place on farmer plots (which occurs in some cases at present), and be conducted in conjunction with DA demonstration plots so as to include farmers in the actual research/extension linkage process. (A small fund would have to be established to cover any farmer losses as a result of the research/demonstration activities.) Essential to this would be to include the results of the demonstration plots as an input into the research/extension feedback and analysis process.

Lastly, the entire research, extension, and farmer linkage process needs to be reoriented to consider not only the high production, high rainfall areas, but the low rainfall, food insecure areas as well. The input of farmers in these areas will be crucial to this reorientation.

5. Gender Issues and Extension to Households

a. Issues

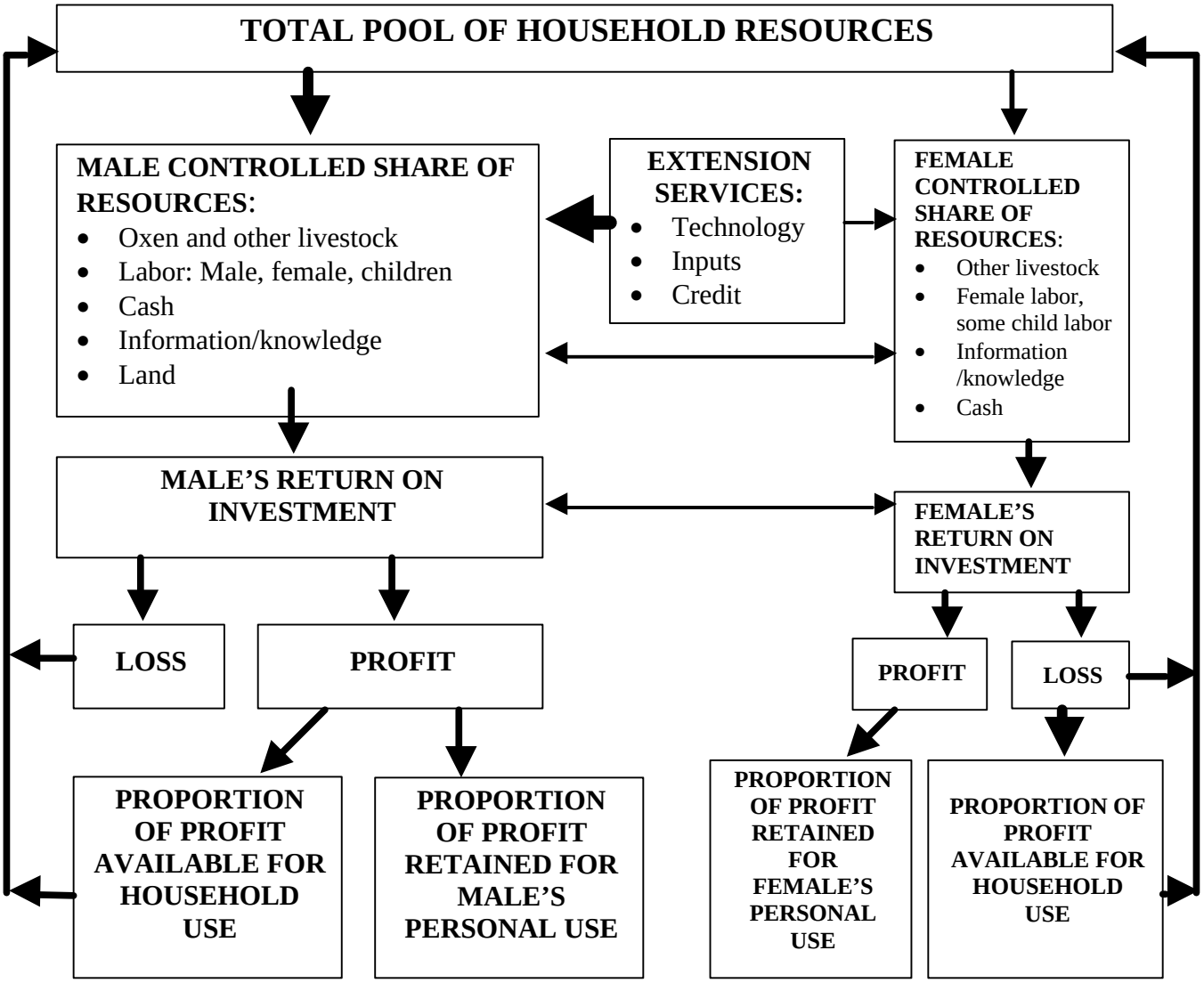
i. Extension and Household Resource Allocation

Women play a critical role in agriculture in the Amhara Region. However, social and cultural constraints limit their access to extension services. Extension in the region and throughout Ethiopia deals with the household as though all decisions concerning the allocation of resources for economic activities were made by one individual–the household head[24]. This view of the household fails to recognize the complexity of intra-household divisions of labor and resources

[24] CISP, 1997.

and results in the marginalization of women, particularly those in male-headed households[25]. Figure 2 illustrates the flow of resources in a household where extension services are primarily directed at the male.

Figure 2: Household Resource Allocation and Flow



In households with both male and female adult members, both adults often engage in semiautonomous production activities. For example, the man may have primary control over the land and oxen, and utilize them in crop production. Decisions concerning what inputs to use, and how to dispose of the outputs from these crops remain in the control of the man. The woman, on the other hand, may have the primary responsibility for producing vegetable crops in

[25] Blumberg, 1994; Masefield, 1996; Quisumbing and Maluccio, 2000.

the home garden. She selects the crops to plant and decides how the produce is to be utilized. In most cases, extension information and inputs are directed to the household head, usually the man, with the expectation that he will transmit whatever information pertains to his wife's activities to her. Numerous studies show that this does not often occur effectively, hence overall household productivity is compromised when extension services are not provided directly to the individual who has primary responsibility for a particular enterprise[26]. In some cases, the only extension information provided to the household is that concerning enterprises under the control of the male household head.

Providing extension information and resources only to the household head has a negative impact on household food and income security for several reasons. First, since the man is not directly involved in his wife's enterprise, he may not understand the information received from the extension service. He may then communicate inaccurate information to his wife, or decide to withhold it altogether. Secondly, when only the man receives direct extension assistance, the wife may continue to use inefficient methods of production, hence obtaining low yields and low returns to the resources under her control. Thirdly, since the woman is often in charge of food processing, storage, and preparation, when she does not receive extension advice on these activities, household nutrition is diminished through post-harvest losses and inefficient food preparation practices. Finally, studies indicate that women tend to invest a greater proportion of their profits in the households than do men.

When the woman's productivity is limited by her access to extension information, her ultimate reinvestment in the household's pool of resources is also limited. In cases where the man fails to make a positive return, the whole household suffers since the wife may have little to contribute to the household's well-being. For example, some male farmers informed the team that in the last season they had obtained fertilizer on credit, but due to drought, their crops had failed. They were therefore unable to repay their loans, and in some cases had been forced to sell their livestock in order to meet their credit obligations. The losses they incurred as a result had an impact on the household's food and economic security. On the other hand, if the woman had been responsible for the home garden during the same year, and if she had received adequate extension advice for her enterprise, she may have been able to make a profit on her crops and assist her husband in repaying the fertilizer debt, or at least provide for the household's food needs. Failure to target extension services to the woman therefore increases the whole household's food and economic insecurity.

ii. Household Nutrition

The Amhara region has some of the highest rates of protein-energy malnutrition, vitamin A deficiency, and iodine deficiency in Ethiopia. These nutritional deficiencies need to be addressed in order to break the generational vicious circle of poverty and low productivity.

iii. The Role of Female DAs

There is currently no distinction made by the Extension Service between male and female DAs. All, regardless of gender, are assigned a certain number of target households. In many cases, the

[26] Blumberg, 1994; Endeley and Tetebo, 1995; Saito and Surling, 1992; Naved, 2000; Quisumbing and Maluccio 2000.

female DA, just like the male DA, provides extension information to the farmer—usually the male. Generally male farmers are receptive to extension information provided by female DAs, however, some male farmers interviewed by the assessment team indicated that they prefer to work with male DAs.

No facilities for women with young children are currently available at the DA training centers. This makes it difficult for women with children to train as DAs unless they can make special arrangements for childcare during the six to nine month training period. To obtain a Diploma requires two years, hence most female DAs are unable to enroll in this program for the same reason. In addition, DAs who get pregnant while in service are sometimes compelled to quit their jobs due to the lack of maternity leave and the difficulty of working conditions. These factors limit the number and quality of female DAs serving in the extension system.

In order to reach the target farmers, the DAs have to travel, either by mule or bicycle if available, or on foot. In many cases, female DAs prefer not to use mules or bicycles because it is perceived to be culturally unacceptable. This means that most female DAs have to walk from farm to farm. During the rainy season when roads become impassable and rivers swell, it is sometimes impossible to reach the target farmers even on foot. Travel to remote areas also poses additional security risks for female DAs. In many cases, it is not culturally acceptable for a woman to spend a night away from her home. One female DA reported that a rapist has once attacked her and she was only able to escape by feigning insanity.

In previous times, the BoA provided Home Agents at the *kebele* level to advise farmers, particularly women, on issues related to family nutrition and hygiene, as well as family planning. This program was discontinued two years ago, leaving this responsibility to DAs, both male and female. Not only are DAs not trained in these areas, but also this additional responsibility added to the already heavy workload of the DAs. Recently, the Home Agent office has been reinstated at the district and zonal level, and will serve to complement the work of the DAs.

b. Recommendations

In order for the Extension Service to address the needs of all farmers, both men and women, it needs to adopt a gender-sensitive approach. This implies recognizing the unique role that men and women farmers play, their unique needs, and therefore the adoption of strategies that would maximize the productivity of all farmers, minimize on and off-farm losses, and increase overall household and regional food security. A gender-neutral strategy is tantamount to a gender-blind one. Both extension planners and extension agents need to be aware of the impact of local customs, beliefs, and traditional practices on the productivity of farmers—especially women farmers. Some of the measures that need to be taken include:

- Making a commitment of both staff and funds to assisting women farmers. For example, a unit in the extension system could be established to focus on the needs of women farmers. Just like there is a need to have research aimed specifically at dryland agriculture, there is also a need to establish research on the agricultural activities of women; both within male-headed households and female-headed households.

- Initiating gender-disaggregated data collection and analysis procedures to monitor the activities and needs of both male and female farmers.
- Adopting a recruitment and assignment policy that ensures women farmers are not marginalized by the extension system. The extension system needs to provide incentives to encourage women to train as DAs and remain in their jobs as well as climb the promotional ladder to supervisor levels. For women to become SMSs, they need training in the technical fields of agriculture, usually at the college level. The BoA needs to work closely with the agricultural colleges to boost the number of women admitted. This should be a long-term strategy that includes encouraging women to study science subjects at the elementary and high school levels.
- Through in-serving training, upgrade the skills of some of the women currently serving as DAs so they can assume supervisory positions.
- Reestablishing and strengthening the Home Agents position. The BoA is currently reorganizing its structure. Part of this reorganization includes the reestablishment of the Home Agent position. This position should include women at all levels, starting at the *kebele* level, all the way up to the regional office of the Bureau.
- Conducting training activities that sensitize extension workers on how to interact and assist women farmers. Both male and female DAs would benefit from such training.
- Legal protections should be put in place to safeguard women DAs as they go about their duties.
- Bringing the needs of women in agriculture to the attention of researchers. This would encourage the development of technologies that increase the productivity of women and reduce both pre- and post-harvest inefficiencies and losses.
- Designing training activities that encourage women farmers to participate. This might entail conducting training in locations and at times when it is convenient for women to attend and actively participate. The fact that women generally have primary responsibility for household activities including childcare, food preparation, and collection of firewood and water needs to be taken into account when designing farmer training programs.

Several strategies could be employed to address the nutritional needs of households in the region. Some of these strategies can be implemented through the Extension Service, but many interventions will require the collaboration of other bureaus, including the bureaus of health and education, as well as NGOs working in health, education, and community development. These activities will need to be coordinated in order to address both the quantity and quality of the food consumed in households in the region.

Within the extension system, female DAs should work together with the Home Agents to transmit nutritional education to the household level. This would include teaching women farmers food preparation and preservation methods. This collaboration may be particularly beneficial since Home Agents at the zonal and district levels already receive training in household health and nutritional matters.

Lastly, and by no means the least important, the BoA should coordinate its Home Agents program with the Bureau of Women's Affairs. It should also work with the 360,000 member Amhara Women's Association to raise awareness concerning women's issues, channel

information on solutions to these issues, and serve as a grassroots sounding board for monitoring and evaluating the effectiveness of its programs related to women. The initiatives of both the Women's Affairs Bureau and the Amhara Women's Association can go a long way in improving women's income-generating abilities and boosting overall rural household incomes. These agencies can serve as important conduits for extension information, both on agricultural and non-agricultural activities in the region. AWA has the manpower but would benefit from technical and material support. The Women's Affairs Bureau would be critical in harmonizing the activities of AWA with those of the BoA and development agencies working in the region.

D. OTHER ISSUES RELATED TO INCREASING/DIVERSIFYING HOUSEHOLD INCOME

1. The Availability and Use of Credit

a. Issues

In most parts of the Amhara Region, down payments for farm input credit ranges anywhere from 10 to 40 percent. In some of the rural districts this year, a 40 percent down payment was required, although this can be adjusted or even waived depending on a borrower's relative poverty. The amount of the down payment is determined at the *kebele* or cooperative level, and is based on each farmer's ability to pay, as well as his or her past repayment record. Nevertheless, these relatively high down payments are part of the Amhara Regional Council's policy of weaning farmers away from a dependency on credit and to use their accumulated savings instead. Other credit-related issues include having to repay the loans at the time of harvest when agricultural commodity prices are at their lowest, and the late delivery of inputs purchased on credit.

Repayment at harvest time is a difficult issue for the Amhara Credit and Savings Institution (ACSI). Its bylaws prohibit extending loans to people who already have an outstanding loan balance. Nevertheless, most farmers receive their credit in kind (seed, fertilizer, and limited agro-chemicals) in June, just before the planting season, and do not harvest their crops until January or February. The planning process for the next year's loans begins in March and if a farmer has not paid his/her credit by then he/she cannot be considered for a new loan. An answer to this problem, at least for some farmers in the food secure districts of Amhara, is for a cooperative to purchase member grain in January or February, paying the member the market price at that time, thereby providing the liquidity to allow the loan to be paid off. The cooperative then stores the grain and sells it in June or July when prices increase. Once storage and management costs are subtracted, the members are paid a dividend from the resulting price differential.

Many of the farmers interviewed expressed their desire to obtain credit for farm inputs, although the fear of a crop failure, especially in the food insecure zones, and their subsequent inability to repay their loans, has severely dampened this desire. Farmers are increasingly wary of the risk involved should adequate rainfall, which is necessary for seeds to sprout and for fertilizer to become effective, not be forthcoming. Some farmers noted that in the past they had to sell their oxen, or other livestock to pay their loans after crops failed due to drought.

Discussions with the manager of ACSI also revealed that there are some farmers who upon obtaining input credit fail to repay, not because they have not made sufficient returns, but because they utilize the money after selling their crop on social activities such as weddings. These farmers' unwillingness to meet their credit obligations is making it increasingly difficult for ACSI to continue extending farm input credit. It is also a principal reason behind ACSI's insistence on loan repayment at harvest time.

For credit institutions such as ACSI, which is an agency of the Regional Council, to be sustainable, high repayment rates by the creditors must be maintained. Currently, the regional government borrows money from the government bank (at an interest rate of 8.5 percent) and transfers it to ACSI, who has the institutional capacity to provide loans. Farmers then obtain input loans from ACSI at an interest rate of 12.5 percent. The difference between the two interest rates partially covers ACSI's loan administration costs. Due to the high loan administrative costs that ACSI has been experiencing with input loans, mainly as a result of relatively high default rates (20 percent), the agency is slowly withdrawing from this activity, preferring to focus on micro-credit activities which have relatively higher repayment rates; especially among female borrowers who tend to repay their loans at a slightly higher rate than do men.

Lastly, among the many responsibilities shouldered by the DAs, input credit collection has been one of the most contentious in recent years. Since DAs assist the local administration in identifying credit-worthy farmers, the DAs have in some cases been required to pursue farmers who have defaulted in repaying their loans. This has strained the relationship between DAs and farmers, particularly in the DAs' attempts to provide other extension services.

b. Recommendations

A sustainable means of providing farm-input credit in the food insecure areas needs to be identified, however, any farm credit must be tied to technical packages that can result in returns sufficiently great to pay off the loans and leave the farmer with a sufficient surplus to meet family needs. It makes no sense to offer credit that will only result in bad debts as has been the case in the food insecure areas in the past. One of the strategies being successfully employed in the food secure areas is the use of farmer cooperatives that screen their members for credit-worthiness, thereby shouldering the risk of administering input loans.

DAs should not be used as credit collection agents since it weakens their ability to access farmers and provide technical assistance.

2. The Use of Agricultural Service Cooperatives

a. Issues

Agricultural service cooperatives, as opposed to production cooperatives[27], are gaining strength in western portions of Amhara Region as they begin to demonstrate the value of the services that

[27] Which were used by past administrations to exploit farmers and are still seen by them as organizations to be feared and avoided.

they can provide to farmers, especially in the areas of credit, input supply, and marketing. This appears to be true for three main reasons including:

- agricultural production surpluses caused by favorable agronomic conditions, which in turn allow for the adoption of high production technological packages;
- good technical assistance provided by the Cooperative Bureau, which in turn has recently begun to be supported by the USAID-funded Volunteers in Overseas Cooperative Assistance (VOCA) activity; and
- good management, which is likely to be a result of the second reason.

While the team visited one successful service cooperative (Marawi) in the western portion of the ANRS and was told of several others, we were unable to locate a single successful one in the five eastern, food insecure zones that were visited. This appears to reflect the same general bias in the priorities given to agricultural development that have existed between the two areas for, at least, the past two generations. Nevertheless, as greater emphasis is placed on the development of agriculture in the food insecure districts of the region, especially in the area of crops and their technologies, service cooperatives can play an important role in service delivery. Namely, they can assist in:

- facilitating the extension of credit and its repayment through the identification of creditworthy members which will result in higher repayment rates, lower down payments required, and lower transactions costs for the public and private agencies extending credit which can ultimately lower interest rates charged;
- arranging for a more efficient supply of agronomic inputs, seeking lower cost suppliers, and purchasing in bulk which further lowers costs, including transportation;
- providing farmer members with higher prices for their commodities through crop storage services thereby allowing members to avoid having to sell their crops at harvest time when prices are normally at their lowest; and
- ultimately obtaining sufficiently high volumes and profits to enable the cooperative to employ its own extension agents to advise farmers on the best technological practices[28].

b. Recommendations

Under current conditions in the food insecure districts where the agricultural technologies do not exist to enable farmers to produce a marketable surplus, production credit and the supply of agronomic inputs are not services that will lead to successful cooperatives. Rather these types of services should only be provided in parallel with the development and extension of new dryland technologies capable of producing a surplus. In the meantime, service cooperatives might find an appropriate niche in providing storage services that would allow farmers to either achieve a higher price for the crops they currently produce, or, and perhaps even more likely, the storage service could allow farmers to provide food for their families for a longer period, thereby gradually reducing their dependence on food relief and donations.

[28] This last phase has not been obtained by any of the cooperatives in Amhara Region, but the potential does exist especially in the relatively higher production areas.

As such, assistance to the Cooperative Development Bureau should be increased in the areas of cooperative promotion and education, management training, linkages to credit institutions, and marketing services. The already successful cooperatives in the western portion of the region should be considered 'demonstration plots' for potential, or recently formed cooperatives in the eastern portion of the region through the organization of study tours by DAs and cooperative members alike so that they may become aware of what is possible.

3. Planning in a Decentralized/Centralized System

a. Issue

Amhara follows a planning methodology called "Decentralized Participatory Strategic Planning". In its definition of decentralized planning, Amhara favors empowering communities by allowing them to identify and act on their needs. Decision-making, the methodology documents states, "should be in the hands of the beneficiaries". As such, priorities and goals must be set in a participatory way, with the beneficiaries. At the same time, however, it is also recognized that this decentralized, 'bottom-up' planning must be combined with regional level strategic planning in order to take into account the external socioeconomic situation. External means not only the overall situation at the regional level, but also its relations with the national government.

Responsibility is assigned to the BoPED for drawing up the Regional Plan. The zonal level is responsible for establishing baseline data and for analyzing the impact of planned interventions. The role of the districts in the planning process is to carry out the agricultural/resource analysis of the characteristics and variability of each district. The district offices have Rural Development Committees, (RDCs) which include two socioeconomic development experts. These committees help to plan construction and other public investment programs. At the *kebele* level, planning is assigned to a development team that has the task of trying to mobilize for infrastructure development in the rural areas.

The methodology document further set forth a number of basic problems faced in implementing decentralized sector planning. Most of these also reflect problems of planning found in the BoA's Extension Service:

- There is little data available for planning, from the local to the regional level.
- Few staff are trained in planning technology, and there are almost none at the local level; those that do exist tend to stay only a short time.
- There are no guidelines to help planning at the local level.
- There are no baseline surveys, and hence no benchmarks or indicators to help set goals and targets.

The capacity of the *kebele* associations for planning is not satisfactory, and BoPED is currently trying to revise the planning methodology for all levels.

b. Recommendations

The PTOof the BoA will need guidelines and other assistance from BoPED if it is to embark on a campaign of improving planning processes at the zonal, district and *kebele* levels. Such an effort, however, is made more difficult by the fact that BoPED deals directly with the zonal and district offices, rather than through the BoA and its PTO.

The responsibilities and authority of the BoA PTO for strengthening the overall capacity for planning at the zonal and district levels therefore should be clarified prior to any technical assistance to this office.

While the BoA is responsible for the performance of its agricultural extension services, it does not appear to have the authority to improve and develop the planning or training processes in the zones and districts. Another related issue raised by the Heads of BoPED and the FSU, relates to the capacity of DAs for planning. This problem has two, closely related, parts: DAs need to be able to plan their work so that they can reach the maximum number of farmers with technology packages, training and demonstrations; and if DAs are to begin to exercise a role of acting as facilitators with the *kebele* associations, as well as with cooperative societies, they will need to understand and be able to use not only BoPED's Planning Guidelines, but also be able to collect baseline data on basic needs in rural communities.

In this regard, there are a number of steps the BoA could take that would lead to the establishment of new, agreed upon boundaries of the BoA's authority to improve its management of the Extension Service. The BoA could, for instance, take a proactive role and, in consultation with the BoPED, develop an Action Plan for strengthening planning at the zonal, district, and *kebele* levels. This plan should include a strategy for strengthening the management of the dryland, food insecure districts and zones.

The BoPED may find that it could increase its effectiveness in strengthening planning in Amhara were it to help sector Bureaus such as the BoA improve their planning and management capabilities. For instance, if the BoA were to ask for assistance from BoPED in improving its planning and management, the BoA may find that this would result in a fruitful collaboration between the two agencies.

4. Off-farm Income Generation/Diversification

a. Issues

Due to the level of poverty in many of the rural areas in the Amhara Region, most households lack any surplus financial resources to purchase goods from the market. They largely depend on subsistence agriculture and lack skills that would enable them to engage in off-farm income-generating activities.

Since most rural households in the region have such low-income levels, anyone attempting to engage in off-farm income generating activities may fail to find buyers for their commodities due to a lack of disposable income. Additionally, all-weather roads serve only 22 percent of the region. This makes it difficult to transport goods from one area to another.

b. Recommendations

Households in the rural areas of Amhara need to diversify from depending on agricultural activities alone to engaging in some off-farm activities. In order to be able to achieve this goal, they need infrastructure development, particularly roads, as well as skill training in off-farm activities. The DAs of the Extension Service should not be depended upon to promote these types of activities, since they are already overburdened with responsibilities related to agriculture. Rather, off-farm income generation activities are within the mandate of the Bureau of Trade and Industry (BoTI). The USAID Mission might consider support to the BoTI in this regard, or it might consider using the services of specialized local and international NGOs to search out and implement off-farm activities. Some of the strategies that might stimulate the off-farm rural economy include:

- Provide micro-credit for petty trade. This might include the sale of food crops, fattened livestock, farm implements, and other household consumer goods. The micro-credit approach that is currently being used by ACSI has achieved reasonable success, particularly in the high potential areas. The challenge is to find ways in which such credit can be made available to farmers in the drought-prone, food-insecure regions as well.
- Provide skill training for rural household members. This can include skills in the production of farm implements, weaving and craft making. To achieve success, individuals would probably need to be provided with materials and tools, particularly in the initial stages. These items could be provided on credit with the loans being recovered as the entrepreneur establishes him/herself and begins making a profit.
- Introduce modest and appropriate food processing technologies. This would enable farmers to preserve their products after harvest and have them available for home use or sale in the marketplace.
- The identification and development of local handicrafts for sale to the tourist trade and for export.
- In some of the severely drought-prone areas, rural household members should be encouraged to seek employment in other locations as migrant laborers. This would not only increase household income and energize the rural economies, it would also reduce the pressure on natural resources in these severely degraded areas and give them a chance to regenerate. In some of the areas where natural degradation is acute, permanent migration might be the only viable option for many.

5. Linkages Between BoA and other ANRS Institutions

a. Issues

The principal ANRS agencies with which the BoA has potentially overlapping activities are FSU, the Bureau of Health (BoH), the Bureau of Education (BoE), and BoTI. Of these organizations, close collaboration with FSU is the most critical. At a recent USAID-funded workshop entitled, “Awareness Creation Workshop on USAID Support to the Food Security Program”, it was decided that the FSU was not an implementation unit, as opposed to the BoA, but rather a planning and coordination unit for the ANRS and donor assistance in the food insecure zones. Nevertheless, that appears to be about as far as any agreement between the two

organizations has reached. Since both are responsible to the Regional Council, which is a political body too high for day-to-day decision making, there still remains a large void concerning policies as to how food security issues will be addressed.

Coordination with the other line bureaus is less critical, but nevertheless is important, especially as it affects the workload of the DAs, the most important members of the Extension Service. These other bureaus, not having sufficient resources to have field staff of their own, have tended to rely on the DAs of the Extension Service for many things, including data collection and information dissemination. This extra workload not only detracts from the agricultural extension activities of the DAs, but since it is not remunerated, adds to their frustration and disenchantment with their jobs. The BoA has recently taken the decision to resist attempts by the other bureaus and to have the DAs concentrate only on agricultural matters.

b. Recommendations

The FSU and the BoA need to establish organizational protocols concerning basic policy issues that differentiate between the relatively high production, high rainfall areas, and the food insecure, low rainfall areas. Not only are the appropriate technological requirements of the two sets of areas different, but the extension methodologies and even the land use policies are as well.

While efficiency and coordination of the activities of the line bureaus are laudable intentions, the role of the DA cannot be viewed as general rural DAs of change. Their education, remuneration, and working conditions simply do not allow for it. The assessment team therefore commends the BoA's recent decision to limit the role of DAs to agricultural issues.

6. Linkages to Other Donors and NGOs

a. Issues

Many donors and local and international NGOs are working in the Amhara Region. The Disaster Prevention and Preparedness Commission (DPPC), the national coordinating agency for national and international NGOs working in the country, currently has 65 organizations registered with it who are, in one way or another, working in the Amhara Region. BoPED, on the other hand, coordinates the activities of bilateral donors such as SIDA and GTZ, while the FSU coordinates the activities of some donors, such as USAID, working in food insecure areas. The Ministry of Economic Development and Cooperation (MEDaC) that normally coordinates donor support at the national level does not function in Amhara Region. Following is a partial listing of the principal donors and NGOs that the Assessment Team was able to contact during its field data collection.

- SIDA- Three years (July 1997-June 2000, approximately US$22.5 million, worked in eight districts in East Gojjam, and eight in South Wollo. Activities included: rural credit program (Grameen Bank model in 16 districts, training), agricultural research (Research Master Plan, Upgrading Research Centers, On-farm Research), improved seed (seed multiplication, processing, quality control, marketing), protected area assessment/environmental monitoring, district and regional road building, livestock

support (veterinary clinics, forage multiplication, animal breeding), agricultural extension (Woreta Training Center curriculum design, assessment for upgrading) and Amhara Radio (market price information, agricultural, gender, and cultural programming, and gender awareness).

Pending funding approval, new program to begin sometime in the future that would expand above activities to all districts in East Gojjam and South Wollo, plus assistance to Woreta Training Center estimated at $US 7.5 million.

- GTZ- Began in 1996, currently funded to 2001, working in selected pockets of six districts in South Gondar, attempted off-farm income generation but not successful, worked at district-level road construction, supported a technical vocational training center, presently work primarily with soil and water conservation, testing and introduction of fodder species, testing and introduction of triticale as an alternative grain crop, potable water supply, and some appropriate technology (treddle pumps, and oxen drawn plows to penetrate plow pan), plus training and institutional strengthening of district administrations. BoH, BoA and FSU.

- World Bank- Ongoing agricultural research and training loan for US$40.0 million to upgrade research centers in entire country including Amhara Region, will establish a research center in Waghimra (Sekota) for dryland farming. Have already sent 40 EARO research staff for higher degree training to India and South Africa.

- European Union (EU)- US$6.0 million for the training of DAs in Amhara Region. This is to be in the form of monetized food aid, but they are encountering problems with the monetization process.

- ADA- Local NGO based on contributions from individuals (100,000), international donors and volunteer workers, plus US$1.5 million from the Packard Foundation for reproductive healthcare program. Also train carpenters and masons (2,200), and adults in literacy. Build community infrastructure, rural roads (100 km), clinics (15), and rural schools (33).

- Organization for Rehabilitation and Development of Amhara (ORDA)- Local NGO established in 1984 by volunteers to assist in famine relief, have evolved into a development organization working in environmental rehabilitation, soil and water conservation, crop and livestock production, small scale irrigation, rural water supply, food aid distribution. 400 employees, 200 of which are temporary working in food aid distribution, 200 work in development activities. Have project offices in seven districts in North and South Gondar and North Wollo. When not being used for food aid distribution they rent their fleet of trucks to earn income.

b. Recommendation

Development assistance to the food insecure districts needs to be better coordinated to avoid duplication of efforts and to coordinate ‘lessons learned’ and ‘best practices’ among the BoA,

donors, and NGOs working in the region. Coordination between BoPED, the DPPC, and the FSU needs to be improved.

As the USAID Mission develops and implements its Result Package for the Amhara Region there will be several opportunities for coordination with other donors and NGOs. SIDA and its support for the upgrading of the Woreta Training Center to an agricultural college for the training of DAs is the most obvious example of this type of coordination. Parts of the SIDA-designed curriculum for Woreta would also be transferable to the Kambolcha Training Center that is also a target for USAID support. Additionally, the GTZ activities in South Gondar related to soil and water conservation, appropriate technology development, and assistance to the *kebele* and district-level administrations could be used by the Mission for expansion and replication into other districts in the region. Lastly, the two principal local NGOs, ORDA and ADA, should be considered as potential partners for training and other activities at the grassroots level.

7. Land Use Policy and Planning

a. Land Closure and the Hillside Privatization Program (HPP)

i. Issues

The BoA is currently implementing a land closure policy in a number of districts. This means that public grazing lands are set aside and closed to free grazing which allows natural vegetation to regenerate without human interference. Land that has been closed for even a short time has a natural ability to regenerate itself; native trees and grasses quickly take over the closed area, forming a natural barrier to further erosion and land degradation. The elimination of animal traffic on the land also reduces the compaction of the soil, which results in better infiltration of water and less runoff.

The biological and conservation benefits of land closure are well established, but the sociological and economic consequences are not quite as clear. Most of the lands that have been closed were previously public grazing lands; consequently, households who had been using these lands in the past are required to find new sources of fodder for their animals. This means relocating to different grazing lands for their animals and/or changing to the 'cut and carry' system of obtaining animal fodder.

Both options have liabilities that need to be addressed. Simply moving animals to other grazing lands will put more stress on these unprotected areas and will cause their accelerated degradation. Cut and carry, which is an environmentally friendly method of managing fodder production, is labor intensive and a new concept for many farmers in Amhara. While some farmers have demonstrated a willingness to use the cut and carry method to obtain fodder, the issue of to whom does the fodder belong that is produced on a land closure area still remains.

Officials in the food insecure districts have stressed that they need, "conservation based technologies". The ANRS's HPP provides the structure that addresses both the need for conservation-based technologies and the need for well-defined user rights.

The HPP was first practiced in the Habrew District of North Wollo. In this program farmers are given access to 0.25 to 0.5 hectares of hillside that they are to manage and maintain. The farmers have been told that the land is theirs to manage and use and that they will receive a "Certificate of Usership" which can be passed on to their children. The certificate specifies the land area, location, and the current vegetation cover.

While not allowed to plow, or plant annual crops on their HPP land, farmers are free to manage the land as they like, with the exception of free grazing. Cut and carry is the only method of fodder management allowed. Farmers are permitted to plant trees on the land and many have been planting bare-root eucalyptus seedlings produced in their own small nurseries. At this point in time few farmers have planted fodder species on the hillside plots.

HPP has been accepted by the ANRS Regional Council and has been incorporated into the region's future land-use policy. This progressive policy has great potential to: improve the income of the farm household, conserve and protect valuable soil and water resources, and make long-term land tenure a reality for some farmers. This has been the expectation and desire of many working in agriculture in the ANRS and it is not surprising that HPP is popular with many farmers.

ii. Recommendations

HPP should be promoted in the ANRS through the formation and implementation of a BoA/FSU team to promote the development and proper management of land closures using HPP. This team should focus on the following:

- Applied research on the management of land closures for the sustainable production of fodder. This research and associated training should be conducted on farmer's hillside plots with the purpose of determining the appropriate species composition and cultural practices needed to maximize fodder production.
- Strengthening the capacity of the BoA to contract with farmers to multiply and produce local and introduced fodder species to be used on the privatized closures. This should include the development of the necessary nursery techniques to produce these species and training for DAs and farmers in their production.
- The BoA should encourage farmers to produce only fodder, and indigenous tree and bush species on these plots.

b. The Use of Title II Food for Community Mobilization Projects

i. Issues

Food for Work (FFW), CFW and Employment Generation Schemes (EGS) are all currently being used in the ANRS. All three systems are used to encourage local people to participate in community development activities. Many of the activities are associated with the conservation of soil and water and are under the direction of the BoA.

Different groups of people participate in each of the systems and the quality of the work accomplished depends on the system used.

- Individuals involved in CFW activities are paid in birr. Generally the most able-bodied individuals participate in CFW and better quality work normally results from this form of payment.
- In FFW projects the participants are paid in food commodities for their accomplishments according to work norms that are established by the ANRS. FFW is used by donors, NGOs, and the Integrated Food Security Program (IFSP) of the ANRS.
- In EGS projects food commodities are provided to food insecure districts and the poorest people are targeted to participate in development activities to receive the food. The food commodities are distributed based on 'piece work' for EGS activities and the quality of the work is generally lower than with the other two types of payment.

FFW and EGS are commonly used to build soil and water conservation structures (terraces and bunds) on both communal land and on land that has been allocated to households. The purpose of these structures is said be soil conservation but in many cases the activities are 'make work' projects and the distribution of the food to the local community is the main purpose of the work. FFW and EGS avoid free food distribution, but the structures produced are not always well made or accepted by the community. Conservation structures produced in this manner are not generally maintained unless more food is used to pay for their maintenance. At times the farmers will destroy the structures on their land because it takes land out of production and some believe that the structures harbor pests such as rats. At other times farmers simply destroy the structures so that they can be remunerated to rebuild them again. The agitation of the soil while making the structures and then again when the farmer removes the structures promotes more erosion and defeats the purpose of the soil conservation measures.

ii. Recommendations

Soil and water conservation is greatly needed in the ANRS, but the construction of conservation structures on privately managed farm plots should be the decision of the individual farmer. Farmers should undertake these conservation measures because they are convinced that the structures will be beneficial to them, not because FFW or EGS is available to pay for the work.

The construction of soil and stone bunds on public lands is not necessary. The best conservation measures are those that disturb the soil the least. Area or land closures do not require disturbing the soil and allow for the development of permanent vegetative ground cover, which is the best means of protecting the soil from erosion. Individual households should manage these closed lands under the HPP mechanism mentioned above. The natural vegetation produced on these privately managed plots would protect and renew the soil and provide fodder for animals at the same time.

The need for FFW and EGS does exist in some food deficit areas, but the activities selected under these mechanisms needs to be seriously considered. Gully stabilization, road and path maintenance, and work in tree and fodder nurseries are tasks that need to be undertaken and are appropriate for FFW or EGS. CFW produces the best results and should be considered for the

construction of rural roads and small-scale irrigation systems when they are appropriate and properly planned.

c. Voluntary, Managed, and Assisted Resettlement

i. Issues

Some areas of the ANRS are no longer able to support their current population because of environmental degradation and recurring drought. Many households in these areas are not able to produce enough food to support themselves during large portions of the year and must survive on relief food.

Waghimra is a case in point. Many households in Waghimra are producing only a three-month supply of food on their farm plots. These families survive the rest of the year by selling livestock and by participating in FFW and EGS programs. These programs are conducted by a wide variety of organizations including the DPPC, the EU, the World Food Program (WFP), and a number of NGOs. Relief aid may very well be the largest industry in the zone. BoA officials and local residents indicated that food insecurity has prevailed since the mid-1970s and see little hope for real and lasting change.

The possibilities of increasing the production of grain or other staple foods in Waghimra are limited. The BoA's cereal packages are not working because of limited and erratic rainfall. It is generally agreed that the production of staple crops cannot be increased using currently available technologies.

Farmers and BoA employees agree that the increased use of the livestock packages may provide the best alternative to the unsuccessful cereal packages. Zonal BoA officials stress the need for "conservation-based forage development". Farmers have agreed to land closures and are very interested in the technological packages associated with livestock, fodder production, poultry, and apiculture. These packages have the potential to improve the lives of some households, but it is generally felt that the human population has exceeded the carrying capacity of the area by at least 40 percent. Many farmers and BoA staff believe that the only alternatives are continued reliance on relief food or a permanent reduction in the population through voluntary resettlement.

The previous regime was notorious for its resettlement policy because families were forced to relocate to other locations within Ethiopia. In most cases the relocation was not only involuntary, but was also unmanaged, long and difficult, and no assistance was given to help in the resettlement.

The current government has agreed on a policy of voluntary and managed resettlement. In this program, households who are no longer able to support themselves because of the degradation of the local environment may resettle in the less populated areas of the region. Households to be considered for resettlement will be from government-defined degraded areas and relocation will be permitted in other government-defined, underpopulated areas. This policy, if implemented properly, may be the best alternative for families in areas such as Waghimra.

ii. Recommendations

Voluntary, managed, and assisted resettlement should be supported. Criteria need to be developed in the following areas to assist in the resettlement process: selection criteria for areas that require emigration; selection criteria for areas that can support immigration; selection criteria for families that have volunteered for resettlement; and the development of procedures for relocation that take social, economic, and environmental issues into consideration.

8. Zonal and District Selection Criteria

a. Issues

In order to achieve the planned for development results of the FSU, the BoA, and the USAID Mission, careful consideration will be needed to determine where the proposed activities will have the greatest impact. Specific activities may be focused on targeted districts or zones or may be region-wide depending on the nature of the activities. The activities under SO3 in agricultural research, extension, and watershed management will also have to be harmonized. As such, zonal and district selection criteria might be necessary in order to prioritize developmental assistance.

b. Recommendation

The USAID Mission should work closely with other donors, the BoA, and the FSU to ensure that the proposed program will have the greatest possible impact. The following prioritization process is suggested:

- Develop an in depth understanding of other donor and NGO programs that are currently being conducted or are planned for the future in the ANRS so as to avoid duplication of efforts.
- Discuss with other donors and ANRS officials the possibilities of cooperative support of programs of common interest.
- Determine the level (district, zonal or regional) at which specific activities should be conducted.
- Develop a process and the criteria necessary for the selection of specific zones or districts such as other Mission activities in Amhara Region, agronomic or livestock potential, road accessibility, level of community interest, irrigation potential, and land use potential.

APPENDIX A

APPENDIX A
CURRENT BOA TECHNOLOGY PACKAGES

The agronomic packages include grains and legumes.

- The grain packages include: Teff, Wheat, Barley, Millet, Rice, Durum Wheat, Maize, Sorghum, and Mixed Wheat and Barley.
- The legume packages include: Horsebeans, Field Peas, Lentils, Haricot Beans, Chickpeas, Neg, Flax, Rape Seed, Sesame Seed, and Cotton.

Each grain and legume crop package includes some or all of the following information;

- The variety of the grain or legume,
- The time of seeding,
- The seeding rate,
- The time of fertilization,
- The rate and type of fertilizer,
- Pesticide application and rate,
- Weeding methods,
- Harvesting techniques, and
- Altitude and rainfall requirements.

The horticultural packages include vegetables, fruit, coffee, and spices.

- The vegetable packages include: Potatoes, Onions/Garlic, Peppers, Tomatoes, Swiss Chard, Lettuce, Cabbage, Carrot, Sweet Potato, and Beets.
- The fruit packages include: Papaya, Bananas, Mandarins, Oranges, Avocados, Apples, Sugar Cane, Mangos, Guava, and Bulox Heart.
- The coffee packages include: Coffee Planting, Coffee Seedling Production, Rejuvenation of Old Coffee Plants, and Coffee Culture.
- The spice packages include: Ginger and Fenugreek.

Each horticultural package includes some or all of the following information;

- Crop type and seed variety,
- Date of sowing,
- Transplant timing and spacing,
- Fertilizer requirements,
- Pesticide application,
- Weeding, and
- Harvesting.

The livestock packages include; large animals, poultry, apiculture, feed types, and fish.

The large animal packages include: Cross-breed Holstein Heifers, Artificial Insemination, Bull Station Management, Fattening of Sheep and Goats, Fattening of Oxen, Exotic Male Sheep for Breeding, Selected Local Sheep, and Selected Local Goats. The poultry packages include: Exotic Chickens, Exotic Male Chicken as breeder, Local Chickens. The apiculture packages include: Top-Bar Kenyan Beehives, European Box Beehives, and Local Beehives. The feed packages include: Inter-Cropping with Maize or Sorghum, Homestead Feed Production, Planting of Feed on Bare Land, Planting Feed on Terraces, and Mixed Fodder Production. The fish packages include: Sun-Dried fish, Air-Dried Fish, and Fillet Processing.

Each livestock package includes some, or all of the following information;

- Animal type and breed,
- Type of housing,
- Type of feed,
- Feeding system,
- Care after birth, and
- Milking.

The natural resource management and post-harvest packages very greatly and cannot be standardized.

The natural resource management packages include: Woodlot Management, Seedling Raising, Farm Boundaries, Homestead Management, Trees on the Farm, Alley Cropping, Multi-story Trees, Roadside Planting, Watershed Management, and Soil and Water Conservation.

The post-harvest packages include: Wheelbarrows, Animals for Draft Power, Tomato Packaging, Hand-Powered Maize Sheller, Motorized Sheller, Multi-purpose Thresher, Grain Storage Bin, and Potato Storage Bin.

APPENDIX B

APPENDIX B
BIBLIOGRAPHY

Abuhay, Shumiye. Amhara National Regional State. Food Security Projects Coordination Office. Off-Farm Activities and Their Contribution to Achieve Food Security. Presented at a Workshop on Awareness Creation on USAID's Support to Food Security Program. May 30-31, 2000. Bahir Dar.

ALMA Newsletter. Volume 1 No. 2 Amhara Development Association (ADA). May 2000. Addis Ababa.

Alemneh Dejene. The Training and Visit Agricultural Extension in Rainfed Agriculture: Lessons From Ethiopia. *World Development*, Vol. 17, No. 10, pp. 1647–1659. 1999.

Amhara National Regional State Bureau of Agriculture. Agricultural Research Master Plan. Volume 1. Main Report. Prepared by CEDEP Consultants. December, 1999. Addis Ababa.

Amhara National Regional State Trade and Industry Bureau. Assessment and Recommended Strategies of Agricultural Production in the ANRS (Volume 1). Prepared by Limat Consultantcy. September, 1997. Addis Ababa.

Current Modalities and Future Strategies of Agricultural Marketing in the ANRS (Volume 2). Prepared by Limat Consultancy. September, 1997. Addis Ababa.

Export Promotion Strategy for Selected Agricultural Products from the ANRS (Volume 3). Prepared by Limat Consultancy. September, 1997. Addis Ababa.

Elaborations and Expositions on Comments Raised by the Client on the Draft Final Reports (Volume 4). Prepared by Limat Consultancy. September, 1997. Addis Ababa.

Amhara National Regional State Regional Food Security Unit: Project Proposal on Agricultural Extension and Training. June, 1999. Bahir Dar.

Amhara National Regional State Regional Food Security Research Assessment Report. Prepared by USAID Collaborative Research Support Programs Team. May, 2000. Addis Ababa.

Amhara Women's Association. The Profile of the Amhara Women's Association. June 1992. Bahar Dar.

Assefa, Tesfaye. Livestock Development in the Peasant Sector of Highland Ethiopia: Some Policy Issues and Implications. African Livestock Policy Analysis Network (ALPAN). Network Paper No. 24. International Livestock Center for Africa (ILCA) June, 1990. Addis Ababa.

Blumberg, Rae L. "Reaching Africa's 'Invisible' Farmers: To Benefit Women, Extension Services Need Overhaul" In African Farmer. No. 11.A. Quarterly Publication of the Hunger Project. April, 1994. New York.

Blumberg, Rae L. African Women in Agriculture: Farmers, Students, Extension Agents, Chiefs. Development Studies Paper Series. Winrock International Institute for Agricultural Development. December, 1992. Morrilton.

Booth, William and Robert Morin. Assessing Organizational Capacity Through Participatory Monitoring and Evaluation (Handbook). March 1996. Addis Ababa.

Calavan, Kay; Diana EspaZola, Sydney Lewis, Lynne Manrique and Kristan Mitchell. Gender and Economic Participation: A Review of the Literature, Final Report. USAID. January, 1995. Addis Ababa.

Catterson, Thomas M., Ato Moges Worku, Ato Messele Endalew. Carmela Green Abate, Frank Brockman, Ato Abebe Wolde Amanuel and Ato Kibru Mamusha. "Programmatic Environmental Assessment of Small-Scale Irrigation in Ethiopia" Catholic Relief Services, US Catholic Conference. September, 1999. Baltimore.

Comitato Internazionale Per Lo Sviluppo Dei Popli (CISP). "The Female Farmer: Fertile Ground? A Gender Assessment Study of Agricultural Inputs Adoption in Eight Case Study Areas in Four Regions of Ethiopia." Embassy of the Netherlands, October 1997. Addis Ababa.

Demeke, Mulat, Valerie Kelly, Ali Said, J.C. le ValleJ and H. Chen. Grain Market Research Project. Agricultural Market Performance and Determinants of Fertilizer Use in Ethiopia. Working Paper No. 10. Ministry of Economic Development and Cooperation. January, 1998. Addis Ababa.

Diriba, Getachew. *Economy at the Cross Roads: Famine and Food Security in Rural Ethiopia.* CARE International in Ethiopia. 1995. Addis Ababa.

Endeley, Joyce and Rosetta Tetebo. Gender Considerations in Designing Agricultural Extension Programmes. Paper Presented at the Workshop on 'Developing African Agriculture: Achieving Greater Impact From Research Investments'. 1995. Addis Ababa.

Ethiopian Agricultural Research Organization: Dryland Agricultural Research Strategic Plan. July 1999. Addis Ababa.

Ethiopia Statistical Abstracts 1996/97, 1997/98, 1999. Central Statistical Authority (CSA). Addis Ababa

Ethiopian Society of Animal Production (ESAP). Proceedings of the Fourth National Conference of the Ethiopian Society of Animal Production. April, 1996. Addis Ababa.

Gebre-Egziabher, Tegengne and Addis Tiruneh (Eds.) Proceedings of the Twenty-fifth Anniversary Symposium on Issues of Development Research in Ethiopia. Institute of Development Research held in November, 1998. March, 1999. Addis Ababa.

Gemebo, Tsegaye Demissie. Report on the Assessment of Nutritional Problems and Identification of Potential Interventions in Amhara National Regional State. USAID. December, 1999. Addis Ababa.

Giorgis, Sentayehu Gebre. Role of Women's Participation in Human Development: A Review of the Ethiopian Case. December, 1993. Addis Ababa.

Gladwin, Christina H. Gender and Research Design: Old Debates and New Issues. Institute of Food and Agricultural Sciences, Food and Resource Economics Department. September, 1995. Gainesville.

Holt, Julius and Mark Lawrence. *Making Ends Meet: A Survey of the Food Economy of the Ethiopian North-East Highlands.* Save the Children U.K. 1993. Mary Datchelor House, London.

Howard, Julie, Valerie Kelly, Mywish Maredia, Julie Stepanek and Eric W. Crawford. Progress and Problems in Promoting High External-Input Technologies in Sub-Saharan Africa: The Sasakawa Global 2000 Experience in Ethiopia and Mozambique. Department of Agricultural Economics, Michigan State University. Staff Paper No. 99 – 24 . 1999. East Lansing.

Ligunya, Alice Akinyi. A Strategy for Incorporating Gender Issues in the Proposed Loita Forest Integrated Conservation and Management Project (LFICMP). Phase 1 Final Draft. 2000. Nairobi.

March, Candida (Compiler). A Tool Kit: Concepts and Frameworks for Gender Analysis and Planning. Gender and Development Training Centre, OXFAM. 1996. United Kingdom.

Masefield, Abi. Placing Gender Issues Within the National Context of Agricultural Strategies and Policies in Input Adoption. 1997. Addis Ababa.

Income Diversification, Food Security and Gender in the Context of Tigray: Concepts, Connections and Strategies. October 1996.

Ministry of Labour and Social Affairs, Women's Affairs Department. Information Kit for Gender Sensitive Development in Ethiopia. July 1994. Addis Ababa.

Naved, Ruchira Tabassum. Intrahousehold Impact of the Transfer of Modern Agricultural Technology: A Gender Perspective. Food Consumption and Nutrition Division, International Food Policy Research Institute (FCND-IFPRI). Discussion Paper No. 85. April 2000. Washington, D.C.

PACT-Ethiopia. IMPact Volume 1, Issue 9. October – December 1999; Volume 1, Issue 10. January – March 2000. Addis Ababa.

Norton, Steve (Evaluator). Mid-Term Impact Evaluation of the Ethiopian NGO Sector Enhancement Initiative Project. USAID Cooperative Agreement No. 663-0020-A-00-5501-00. February 29, 2000.

PET Consultants, Kenya and GENESIS Development Consultants, Ethiopia. The Conservation Strategy of Ethiopia (CSE): Strategy for Mainstreaming Gender and Ensuring Effective Participation of Women in the CSE/RCS Process. 1999. Addis Ababa.

Plucknett, Donald L. Developing African Agriculture: Achieving Greater Impact from Research Investments – Tailoring Agricultural Research for Sub-Saharan Africa. Workshop Report. September 26-30, 1995. Addis Ababa.

Prime Minister's Office of the Federal Democratic Republic of Ethiopia – Women's Affairs Sub-Sector. Promoting the Advancement of Women in Ethiopia. Beijing + 5 Country Report. July 1999.

Quisumbing, Agnes R. and BJnJdicte de la BriPre. Women's Assets and Intrahousehold Allocation in Rural Bangladesh: Testing Measures of Bargaining Power. Food Consumption and Nutrition Division, International Food Policy Research Institute (FCND-IFPRI). Discussion Paper No. 86. April 2000. Washington, D.C.

Quisumbing, Agnes R. and John Maluccio. Intrahousehold Allocation and Gender Relations: New Empirical Evidence from Four Developing Countries. Food Consumption and Nutrition Division, International Food Policy Research Institute (FCND-IFPRI). Discussion Paper No. 84. April 2000. Washington, D.C.

Saito, Katrine A. and Daphne Surling. Developing Agricultural Extension for Women Farmers. World Bank Discussion Paper No. 156. The World Bank. 1992. Washington, D.C.

Shiferaw, Joy. Integrating Gender in Development: A Case Study of the Ethiopian Experience. Master of Arts in Law and Diplomacy (MALD) Paper. 1998. Tufts University.

Swanson, B.F. and Joffar Rassi. International Directory of National Extension Systems. University of Illinois, Bureau of Education Research. 1981. Urbana-Champaign.

Swedish International Development Agency (SIDA). Support to the Amhara National Regional State: ANRS/SIDA Cooperation in Rural Development – Local Institutions. Publication No. 12. 1996. Addis Ababa.

Swedish International Development Agency (SIDA) Support to the Amhara National Regional State: Programme Document (Final Revised). ANRS/SIDA Cooperation in Rural Development November 30, 1996. Bahir Dar.

Taye Assefa (Ed.) Food Security Through Sustainable Land Use. Policy on Institutional Land Tenure, and Extension Issues in Ethiopia. Proceedings of the First National Workshop of NVIB Partners Forum on Sustainable Land Use. 1999. NOVIB, Addis Ababa.

United Nations Conference on Environment and Development. Global Action for Women Towards Sustainable and Equitable Development. Chapter 24, Agenda 21, as adopted by the Plenary in Rio de Janeiro. June 1992. Conches.

USAID. A Brief Profile of the Amhara National Regional State. 2000. Addis Ababa.

USAID Collaborative Research Support Programs Team. Amhara National Regional State Food Security Research Assessment Report. 2000. Addis Ababa.

Annex 1. Amplified Program Description for the Increased Rural Household Production and Productivity Program Strategic Objective Grant Agreement. June, 2000. Addis Ababa.

Institutionalization of Farmers Participatory Research in the Southern Nations, Nationalities and Peoples Regional State. Project Proposal Submitted to the EC – Food Aid and Food Security Programme. 1998. Addis Ababa.

Report on the Enabling Environment for the Ethiopian NGO Sector. February 2000. Addis Ababa.

Frank, Emily. Trip Reports: Bahir Dar June 17-21, 1999; Discussions with Women Farmers in Four Selected Watersheds of Amhara Region. September, 1999. Addis Ababa.

McCarthy, Steve. Bahir Dar Trip Report. USAID – Ethiopia. June, 1999. Addis Ababa.

Amhara National Regional State: Integrated Food Security Program (Short Summary) October, 1998. Addis Ababa.

WAAS International Pvt. Ltd. Co. Title II Special Objective – Food Security and Nutrition Baseline Survey. Part 2 – Volume 1. Catholic Relief Services. December, 1997. Addis Ababa.

Webb, Patrick; Joachim Von Braun and Yisehac Yohannes. Famine in Ethiopia: Policy Implications of Coping with Failure at National Household Level. International Food Policy Research Institute (IFPRI) Research Report No. 92. 1992. Washington, D.C.

APPENDIX C

APPENDIX C
LIST OF ORGANIZATIONS AND PLACES VISITED

ORGANIZATIONS VISITED

Adet Agricultural Research Center
Ambessel Fertilizer Company
Amhara Credit and Savings Association
Amhara Development Association
Amhara Woman's Association
Bureau of Agriculture, Amhara
Bureau of Cooperative Development
Bureau of Planning and Economic Development
Bureau of Trade and Industry
Bureau of Women's Affairs
Ethiopia Agricultural Research Organization, Office of Dryland Agriculture
Food for the Hungry International
Food Security Coordination Unit
German Technical Assistance
Ministry of Agriculture, Office of Extension
Ministry of Agriculture,
Organization for the Rehabilitation and Development of Amhara
Rural Technology Multiplication Center, Bahir Dar
Sasakawa Global 2000
Sirinka Agricultural Research Center
Swedish International Development Authority
United Nations Development Program
United States Agency for International Development
Winrock International/Addis Ababa Office
Woreta Agricultural Training Center

ZONES, DISTRICTS, AND *KEBELES* VISITED

Zone	District	*Kebele*
West Gojjam	Yilmana Dersa Mecha	Marawi Cooperative
	Adet	
South Gondar	Debra Tabor	
	Tach Gaiynt	Agat Mena Mesk
	Lay Gaiynt	Newfas Mewcha
North Wollo	Habru	Worelalo
	Gubalafto	Sanka
South Wollo	Worebabo	
Waghimra	Sekota	Hamusit

APPENDIX D

APPENDIX D
SCOPE OF WORK
AMHARA NATIONAL REGIONAL STATE (ANRS)
EXTENSION NEEDS ASSESSMENT AND RESULTS PACKAGE DESIGN

BACKGROUND

The Amhara National Regional State (ANRS) covers an area of 170150 sq. km with an estimated population of over 16 million people. Approximately 89% of the ANRS population is rural and depends upon agriculture as the principal source of livelihood. Agricultural in the region is generally subsistence in nature and dominated by small holder farmers whose traditional farming system primarily consists of rainfed cereal crop and livestock production. Access to markets is very limited, and agricultural productivity is generally quite low.

ANRS average rainfall is relatively high, but erratic rainfall patterns and recurrent drought are a major problem for the agricultural sector. An ANRS Food Security Unit (FSU) study has identified 47 woredas (counties) in eight zones as chronically food insecure. An estimated 2.4 million of the 6.0 million people in these areas are frequently affected by drought and moisture stress and have been unable to adopt new technologies and/or make use of improved management practices. Therefore, the productivity of land and labor in these areas remains quite low and the use of high-value inputs (improved seed, fertilizer and pesticides) and other improved agricultural management practices is very limited.

Ethiopia's agricultural extension system has been actively involved in the dissemination of information and the introduction of relevant technologies to the farming communities for decades. The extension program has used mass media and farmer training (technology demonstrations and individual farmer/household visitation) to transfer new technologies that help improve agricultural productivity and production. Although no major assessment/evaluation work has been done, opinions regarding the effectiveness and results of the extension program are mixed.

The existing agricultural extension program has a participitive element, but concentrates on the transfer of technology packages for improving productivity in the most productive areas. These packages are input intensive, and expected to perform favorably in high potential areas (those with sufficient rainfall) and farmer access to oxen, relatively fertile landholdings greater than 0.5 ha, and financial resources. In spite of the conditions required for the successful performance of these technologies, the program is being implemented nationwide without regard to existing climatic and other factors. More importantly, the current extension system was does not designed to address production problems in marginal areas. As a result farmer access to technologies in the marginal areas of the ANRS is limited to those developed for the high potential areas of the country.

The production problems in the marginal areas are markedly different than those associated with high potential areas. Adoption of input based technology in these areas is much less profitable because productivity is constrained by other factors such as resource degradation, infertile soils, and limited access to land and financial resources.

The ANRS recently approved and adopted a strategy/program designed to address problems of food insecurity in marginal and drought affected areas, and USAID/Ethiopia has signed an agreement with the Government of the Federal Democratic Republic of Ethiopia to support the ANRS program. Planned activities include support for applied research targeting crops and soil and water more appropriate for the 48 drought prone waredas that are chronically food insecure. The pilot extension program, based on assessing the current system's efficiency, will also provide information and advisory services to rural households on alternative technologies to increase production and productivity as a means of increasing rural household incomes. Particular emphasis will be placed on improving the participatory approach, where rural people collaborate in formulating the research agenda. This will require improving the dialogue between researchers, extension agents, and farmers. However, the first step is to conduct an overall assessment of the present ANRS extension system in order to identify the types and level of support (technical assistance, operational support, training) needed recommended in order to improve the effectiveness of the ANRS extension program.

PURPOSE

The purpose of the Extension Needs Assessment is to assess the strengths, weaknesses, and effectiveness of the current ANRS extension system. The end product will be a summary of the types and level of support (technical assistance, operational support, training) recommended in order to improve the effectiveness of the ANRS extension program in the chronically food-insecure woredas of the ANRS.

Since the ANRS extension system is organized and works in consonance with the national agricultural extension system, an understanding of the overall country/national extension program is considered critical and important. Therefore, the assessment will review the overall philosophy and approach of the national extension system as background for the methodologies and mechanisms adopted.

SCOPE OF WORK

The ANRS Extension Needs Assessment will: (1) identify the major problems concerns and attitudes of rural households, DAs, and extension supervisors in the ANRS, and how they are currently being addressed by the system; (2) recommend the sorts of technical assistance, training and operational support needed to make the system more efficient and relevant to the problems of the marginal areas; (3) assess the capabilities of indigenous training institutions to develop appropriate training curricula, design and implement training programs; and (4) recommend areas and levels of support for the extension program to be financed under the food security program.

Specifically the assessment team will answer the following questions:
1- How is the national agricultural extension system organized and staffed? Specifically,

What is the role of the national agricultural extension system in relation to the regional extension systems provision of extension support to farmers? staff training?

How is the national agricultural extension system staffed? How are national and regional staffing decisions made? How much staff movement is there within and between regions?

2- How is the ANRS regional extension system organized and staffed? Specifically,

How effective and timely are communications between the Bureau of Agriculture, zonal offices and DAs? What are the strengths and weaknesses? How many DAs and SMS positions are there in the ANRS? Where are they located? How many of them are currently vacant? What is the academic background of current ANRS extension staff? How many extension supervisors are there in the ANRS? Where are they located? What is their academic background? What are the linkages and collaborative mechanisms between the national and regional systems?

3- What are the priority problems faced the extension service in effectively disseminating technologies and providing extension services to rural households in the focus area? Specifically,

What are the major constraints faced by DAs, SMSs and extension supervisors in delivering extension services in the ANRS, and how they are currently being addressed?
What are the present responsibilities and workload of DAs, SMSs and extension supervisors, and on what tasks do they spend the majority of their time? How sensitive is the current extension system to gender issues? Is the current linkage between researchers and rural households adequate? Are rural views and resulting research agendas based on real problems? What kinds of changes do DAs, SMSs and extension supervisors think should be made in the present system in order to motivate them to more effectively address the problems of rural households? Is there a need for additional farmer training, staff training and support to the entire system to make it more effective (transportation, materials, housing)?

4- What are the priority problems, concerns and thoughts faced by rural households in the ANRS and more specifically in the drought-affected areas of the regional state?

5- How are priority problems currently being communicated and addressed?
What differences in the perception of priority problems exist between men and women?
What could the extension system do to more effectively address those problems for both men and women? Are non-agricultural technical packages being developed and extended, i.e., food storage and preparation, rural household implements, health and sanitation, basic education, etc.? Is the BOA's DA system an appropriate mechanism for the extension of important non-farm specific, rural concepts and technology?

6- What are the existing capabilities of regional training institutions for producing qualified extension personnel and providing the support needed to make the regional extension system more efficient and sustainable? What level of training, and in what subject areas, is available from agricultural training institutions in the region? What are the primary constraints faced by agricultural training institutions in the region? What could be done to alleviate them?

The assessment team will work in collaboration with the ANRS Regional Implementation Team, and more specifically the ANRS Bureau of Agriculture Extension Department and the ANRS

Office of Women's Affairs in carrying out the work. In addition, the assessment team will be expected to consult with other governmental and nongovernmental organizations (NGOs) involved in development activities and working in the Amhara region and in Addis Ababa. Finally, the team will be expected to work in closely with the agricultural technology team concurrently assessing agricultural research (identification of available technology and design of an applied research program to meet the needs and requirements of farmers in the drought-affected areas) in the ANRS.

TEAM MAKEUP

The assessment team will consist of the following individuals:

Team Leader: The Team Leader will be responsible for managing the assessment, and for producing the final report. The Team Leader must have a minimum of a MS level degree in agricultural economics or one of the agricultural sciences. S/he should have extensive experience in the development, implementation and/or evaluation of participatory extension programs in developing countries. African experience is required. Prior experience as a resident advisor in Africa, and familiarity with Ethiopia, is preferred. Estimated level of effort: 50 days

Agricultural Extension Specialist: The Agricultural Extension Specialist will have primary responsibility for characterizing the philosophy, organization, and operation of the existing ANRS extension system and its effectiveness in addressing the needs of rural households. S/he must have a minimum of a MS level degree in agricultural education or a related field, with extensive experience in the development and implementation of participatory extension programs in developing countries. African experience is required. Prior experience as a resident advisor in a developing country, and familiarity with Ethiopia is preferred. Estimated level of effort: 40 days

Agricultural Education Specialist: The Agricultural Education Specialist will have primary responsibility for assessing the training needs of agricultural extension staff in the ANRS, and assessing the capabilities of regional agricultural training institutions. S/he must have a minimum of a MS level degree in agricultural education or a related field, with extensive experience in the training of agricultural professionals and extension staff. African experience is desirable, and prior as a resident advisor in a developing country is preferred. Estimated level of effort: 40 days

Home Economist: The Home Economist will have primary responsibility for assessing the priority needs as expressed by the women members of rural households (particularly with regard to food science, nutrition and household technologies), and assessing the gender effectiveness of the existing ANRS extension program and agricultural training programs. S/he must have a minimum of a MS level degree in Home Economics, Agricultural Education, or a related field with extensive experience in the development and implementation of extension programs targeting women's needs. African experience is desirable. Prior experience as a resident advisor in a developing country, and familiarity with Ethiopia, is preferred. Estimate level of effort: 40 days

REPORTING RESPONSIBILITIES

The Extension Needs Assessment Team will work under the technical direction of the USAID/Ethiopia Team Leader and Deputy Team Leader.

The Team Leader will be responsible for organizing the assessment and writing the report. After the first week in Ethiopia the Team Leader will, in consultation with USAID and the Regional Implementation Team, develop and present an outline of the plan of work and schedule for the assessment.

The Team Leader will be responsible for submitting a draft report to the Regional Implementation Team and the Technical Management Team for review and comment at least 3 days prior to the departure of the other team members from Ethiopia. The draft report should describe the methodology followed in the assessment, and answer the specific questions contained in the SOW, as well as observations on the effectiveness of the overall extension system and recommendations for areas to be emphasized in the development of an extension support program

The Team Leader will complete and submit a final assessment report prior to departing from Ethiopia. The final report will incorporate suggestions and comments forwarded by the SO 1 Team members and other partners. 10 bound copies of the final report, plus an electronic copy in Word are required.

LEVEL OF EFFORT AND TIMING

The assessment team will undertake the work over a period of nine weeks, of which eight will be devoted to in-country activities including production of first draft report and final report. Additional time is provided for team organization in the U.S. The work is expected to begin on/about February 1, 2000 and end on/about April 15, 2000.

LOGISTICAL SUPPORT

The assessment team will be provided with a vehicle to assist in the assessment work in the Amhara National Regional State. All other logistical support needs, including car rental and translations services, will be arranged by the contractor **(OR THE ANRS?)**. The contractor will also be responsible for setting up temporary office facilities, and obtaining computer support and photocopying services in Addis Ababa. USAID/Ethiopia will provide the Team Leader with office space and computer support during the preparation of the final report.

APPENDIX E

APPENDIX E

TOWARDS A RESULTS FRAMEWORK DESIGN

FOR THE

EXTENSION SYSTEM IN AMHARA REGION

August 1, 2000

INTRODUCTION

The following discussion provides the USAID Mission to Ethiopia with a set of activities for inclusion into an ongoing Results Framework formulation currently being undertaken to achieve the Mission Goal of "Increased Food Security" in the country. Specifically, it is directed at partially achieving Strategic Objective Number 3, "Increased Agricultural Production and Productivity" through Intermediate Result 3.3 "Rural Household Cash Crop and Micro-Enterprise Income Increased/Diversified" and Intermediate Result 3.5 "Extension Service Dissemination of Technological Information in Targeted Areas Improved".

The Agricultural Extension Needs Assessment of the Amhara National Regional State identified a number of activities in which USAID assistance could be effectively used to increase or diversify rural household income and improve the delivery of appropriate technology and related services to farmers in the food insecure districts of the region. These activities can be ordered around two sub-results that serve to support both IRs 3.3 and 3.5.

Sub-Result 1: Improved capacity to the Bureau of Agriculture to enhance its delivery of services to rural households through a more highly trained staff, and the efficient collection and dissemination of appropriate information for decision making.

During field data collection for the Extension System Needs Assessment two issues regarding the services of the Bureau of Agriculture (BoA) were mentioned most often; a lack of training at both the formal and informal levels, and a lack of relevant information to disseminate and the means to do so. The following three sets of Activities are designed to support **Sub-Result 1**.

I. FORMAL EDUCATIONAL UPGRADING

This activity is designed to upgrade the knowledge base of selected BoA staff in order to increase its capacity to design and deliver appropriate technology to farmers in the food insecure districts. BoA officials at all levels have repeatedly stated the need for further formal education; an extension system cannot function well without a solid core of knowledgeable professionals that provide expertise to the system. The activity is designed to upgrade individuals from all levels of the BoA and is divided into post-graduate and under-graduate sections as follows: (A training timeframe is provided in Appendix B.)

A. Post-Graduate Education

1. Ph.D. Program

The Ph.D. program is designed to develop future top BoA leadership, build vital international contacts with other institutions, increase knowledge on specific farmer identified problems, and increase the ability of the BoA to conduct on-farm research. Three BoA employees will be upgraded from the Masters level to the Ph.D. level at a US Land-Grant university.

Coursework will be completed in the US allowing the students to develop a broad range of contacts and to be exposed to active research programs. Exposure to the university's Extension Service and the relationship between research and extension will also be emphasized.

Associated on-farm research will be conducted in the food insecure districts of the ANRS and will addresses problems relevant to local farmers. The research will be supervised during periodic visits by a major US professor and by Ethiopian researchers serving on each students' committee. In some cases, depending on scheduling, the US professors would also be expected to teach one, or more, classes at the Woreta Training Center.

2. Masters Program

The Masters program is designed to provide instructors for the Kombolcha and Woreta Training Centers (described below), increase knowledge on specific farmer identified problems, and increase the ability of the BoA to conduct on-farm research. Twelve BoA employees will be upgraded from a Bachelors degree to a Masters degree.

The program will be a 'distance learning' program conducted in cooperation with US 'Land Grant' universities with expertise in dryland agriculture. The program will be run in Bahir Dar and require minimal facilities. The students will take the required coursework via the Internet and e-mail. Each student's 'major professor' will visit Ethiopia twice during the students' research phase to advise the students and guide the Masters thesis research. The graduates will be granted a Masters degree from the involved university with "all the rights and privileges" associated with that degree.

The selection of the cooperating university will be important. The implementing university must be willing to deliver a 'distance learning' education program that meets the needs of the Ethiopian students. This would include the development of appropriate dryland agricultural courses that could be delivered via the Internet.

Research for the Masters degree would be conducted on the four pilot watersheds or other appropriate areas within the 48 targeted districts. Research topics could include natural resource management, livestock management, horticulture, and extension methods. The research is to be applied and be directed toward solving the problems of the households of the targeted districts.

The BoA will select four general areas of research to emphasize. Three graduate students will be assigned to each of the research areas or teams. One professor will advise each three-student team, which will reduce the cost per student of the professor's travel to Ethiopia. Each student on the team will conduct a separate research project but the individual projects will be focused on the team's general research area. This concentrated effort will promote a more rapid increase in the knowledge of a particular problem and reduce the workload of the supervising professor.

An Ethiopian researcher will also be on each student's committee. These researchers will guide the research in the absence of the major professor. This will promote the active involvement of Ethiopia's scientific community, put them "in the research loop", build contacts with other researchers and stimulate them to conduct further research.

The success of the post-graduate research program will depend, in part, on the guidance of an experienced research coordinator. The overall responsibility of this individual will be to advise the BoA on the establishment and progress of each research program and to give guidance to the graduate students as they carry out their research projects. A well-planned and coordinated

effort will result in the development of technological packages that meet the needs of the households living in the food insecure districts.

B. Undergraduate Program

1. Bachelors Program

The Bachelors Program will upgrade Experts, Extension Supervisors, and DAs from the Diploma to the B.Sc. level. The students will study at one of Ethiopia's agricultural universities; Alemaya University, Awassa University or Mekele University. After a competitive process, 24 qualified personnel will be selected from the food insecure districts to apply to a university and area of study that best meets the needs of the district. In addition, 12 women will be selected to obtain a Home Agent degree at Awassa University. Funding for tuition and room and board, approximately 2,000 US$/student/year, will be provided through the USAID grant.

2. Home Agent Training Program

The BoA is committed to using Home Agents as SMSs and Experts at the zonal and district levels. Recent discussions have also indicated that Home Agents will be assigned to some *kebeles*. These Home Agents would be most effective if obtained from within the ranks of the female DAs who are already familiar with the problems of rural households. After a competitive process, 40 qualified female DAs should be selected from the food insecure districts to attend the Home Agent Diploma program at Awassa University. Funding for tuition and room and board, approximately 2,000 US$/student/year, will be provided through the USAID grant.

UNDER-GRADUATE PROGRAM COORDINATION

The long term Program Coordinator described in the Post-Graduate Program will also coordinate the activities of the Undergraduate Program. Staffing, equipment, and other requirements for this activity using external resources can be found in Appendix A.

ANTICIPATED RESULTS

The following results are anticipated through the implementation of **Sub-Result 1.**

Formal Education Program

Ph.D. Program

- Three BoA employees earn Ph.D.s
- Top leadership of the BoA developed
- International research contacts developed
- Ability of BoA to conduct on-farm research increased
- Agricultural packages for food insecure districts developed
- Number of farmers using BoA packages in food insecure districts increased
- Farmer income and productivity increased

Masters Program

- Twelve BoA employees earn Masters degrees
- Ability of BoA staff to use Internet for professional purposes developed
- Ability of BoA to conduct on-farm research increased
- Agricultural packages for food insecure districts developed
- Instructors for the Woreta College of Agriculture developed
- Instructors for the Kombolcha Training Center developed

Bachelors Program

- Thirty-six BoA employees earn Bachelor degrees
- Understanding of agricultural principles and practices developed
- Ability of BoA to train DAs and farmers increased
- Instructors for the Kombolcha Training Center developed
- Twelve BoA employees earn Bachelor's degrees as Home Agents
- Home Agent program becomes more integrated within the BoA

Home Agent Program

- Forty BoA female employees earn Home Agent diplomas
- Staff members prepared for new Home Agent positions
- Ability of BoA to meet the needs of the women increased
- More women farmers put BoA agricultural packages into practice

Assumptions

Ph.D. Program

- Three current BoA employees with MSc. Degrees can be recruited and accepted by a US Land-Grant university.
- Students will return to Ethiopia upon completion of coursework and dissertation defense.

Masters Program

- Internet service to Ethiopia and Bahir Dar improved.
- US universities will to grant MSc. Degrees using "distance learning" methodologies.

Bachelors Program

- Local universities have the capacity to train 48 additional students.
- Home Agent program becomes an integral part of BoA developmental strategy.

Home Agent Program

- The Home Agent position is reinstated at the *kebele* level.
- Female Home Agents achieve the necessary levels of community acceptance.

II. DA AND FARMER TRAINING AT THE WORETA AND KOMBOLCHA TRAINING CENTERS

Woreta Training Center

Most DAs have only a 12+6 or a 12+9 education and need and desire a Diploma to better carryout their responsibilities. It has also been stated that DAs in the food deficit areas need special training to meet the needs of farmers in those areas. SIDA has proposed the upgrading of the facilities and curriculum of the Woreta Training Center to the junior college level. It is proposed that the future Woreta College of Agriculture will graduate approximately 375 students per year. Upgrading Woreta will be a large undertaking and SIDA has expressed interest in cooperating with another donor in this activity.

USAID will consider cooperating with SIDA in the upgrading of the Woreta Training Center. Funding for technical assistance and construction would be provided to further develop the curriculum and facilities. Funding for a study tour by up to three BoA educators to the Pan-American Agricultural College in Honduras, C.A. would also support the development of a strong curriculum. USAID should also consider providing some of the equipment necessary for the upgrade.

At this time, July 2000, SIDA has not yet decided to proceed with the funding of the upgrading of the center. If SIDA does not decide to undertake the process, USAID will take over where SIDA has left off. Inputs required for the full upgrading of Woreta are available in the SIDA proposal and have not been included in this document.

Staffing, equipment needs, and other requirements using external resources can be found in Appendix A.

Kombolcha Training Center

Students in the Woreta Diploma program will come primarily from Amhara's high schools; therefore another facility is needed to help upgrade current DAs to the Diploma level and to give specialized training in dryland agriculture appropriate for the food deficit districts. The Kombolcha Training Center is a logical choice because of its location in a food insecure district.

Specialized dryland courses offered at Kombolcha would provide in depth training in areas such as: fodder production and management, apiculture, poultry production, water harvesting, and in dryland natural resource management. The length of the courses would depend on the topic and could vary from two weeks to three months. The courses will be offered on a rotational basis during periods of the year when DA activities permit their absence from their area of work.

The Kombolcha Training Center would also be used for the training of farmers. Training topics would be similar to those offered to DAs, although at a lower level. Farmer training would generally be shorter in duration, not lasting for more than two weeks.

Permanent instructors and lecturers would be obtained from the graduates of the above mentioned Masters and Bachelors programs. As experienced BoA employees these instructors

would have both the practical and theoretical background to teach at Kombolcha. It is expected that the BoA will cover the room and board of the DAs and farmers.

Staffing, equipment needs, and other requirements using external resources can be found in Appendix A.

ANTICIPATED RESULTS FROM UPGRADING OF WORETA AND KOMBOLCHA TRAINING CENTERS

Woreta Training Center

- Future DAs will earn diplomas in agriculture providing them with up to four times the education the vast majority received before
- Future DAs receive well-rounded agriculture & extension education
- Future DAs capable of understanding and promoting BoA packages
- Number of farmers using BoA packages in food insecure districts increased
- Farmer income and productivity increased

Kombolcha Training Center

- Current 12+9 and 12+6 DAs upgraded to the diploma level thereby tripling their agricultural education
- DAs trained in dryland agriculture appropriate for food insecure districts
- DAs capable of understanding and promoting BoA packages
- Farmers trained in dryland agriculture and appropriate technology
- More farmers put BoA agricultural packages into practice

ASSUMPTIONS

- Woreta Training Center is built and Kombolcha is upgraded.
- Availability of BoA budget to accept the impact of increased salaries due to upgraded training.

III. STRENGTHENING THE BOA'S ABILITY TO OBTAIN NEW INFORMATION AND DISSEMINATE IT TO RURAL HOUSEHOLDS.

A. Obtaining and Effectively Communicating Information

Under SO3 emphasis will be placed on the need for research that addresses the needs of the farmers in the dry, food insecure districts. Many international research centers have been conducting this type of research for years and could give pertinent advice on how to conduct on-farm research and advise the BoA on currently available appropriate technology. The BoA would benefit greatly through the establishment of strong and personal relationships with these organizations and their personnel. This activity, in addition to providing appropriate research

information to the BoA is also seen as being very cost effective saving the ANRS and the country in general vast sums on agricultural research of their own.

This type of relationship can only be established through visits to the relevant institutions and short-term internships (approximately one month long) at these institutions. During these internships BoA officials would be exposed to available appropriate technologies, on-going research, and on-farm research methods. These one-month visits would also allow for the development of personal relationships that would be conducive to further communication after the intern has returned to Ethiopia.

There is great need for BoA extension personnel to be exposed to the extension systems of other developing countries. Observing how the systems of other developing countries do, and do not, work will stimulate new ideas and motivate the BoA to consider changes in its methodologies. The BoA needs to be challenged to consider change in a number of areas including; incentives for extension agents, developing and using extension communication materials that are appropriate for farmers, the role of the female DAs and Home Agents, and methodologies for reaching female farmers.

BoA staff visits to the following Centers for the establishment of a network and exposure to other extension systems.

ICARDA	International Center for Agricultural Research in Dry Areas
ICRAF	International Center for Research in Agroforestry
ICRISAT	International Crops Research Institute for the Semiarid Tropics

Visits to two African countries and two Asian countries to observe different extension systems. Four individuals will visit each country. Four individuals to visit each center.

B. The Development of the Communication Infrastructure

The BoA has the challenge of coordinating the activities of 105 diverse districts in ten zones. Many of these districts are very remote and effective, rapid communication currently does not exist. The only way new information is received at these remote districts is for staff to attend workshops, or from visits by other BoA staff. Consequently, the staff working in these districts is isolated, and in many cases demoralized.

Communication technology currently being used in Ethiopia could greatly reduce the isolation of these remote districts. A number of NGOs (CARE, Food for the Hungry, etc.) are using solar/battery-powered radios coupled with laptop computers to communicate with remote project areas. These systems can send both voice and digital information, and are easy to set up and maintain even in remote areas. The ability of these systems to send digital files makes them very practical for sending any computer generated information including type written reports, spreadsheets, and educational materials. Information downloaded from the Internet can be saved and transmitted via these radio systems. The installation and use of these systems in remote districts would greatly increase their ability to receive and send the information necessary for a dynamic extension system.

The usefulness of the Internet and e-mail to obtain and send information cannot be minimized. The BoA needs this technology if it is going to establish and maintain a network of contacts, both nationally and internationally, as well as with its zonal and district offices. Installation and use of the Internet is imperative if the BoA wants to keep abreast of developments in agriculture and extension.

C. The Design and Production of Relevant Extension Materials

The BoA lacks appropriate training materials of both the DAs and the farmers. The pamphlets and brochures that do exist tend to be small glossy books that are expensive to reproduce. Consequently, they are not being printed in sufficient quantities, nor are they reaching the *kebeles* or the farmers.

The capacity of the BoA to create and produce inexpensive extension materials, especially for farmers, will require training in the design of these materials. Most extension materials currently in use do not appear to be designed to be mass-produced to reach farmers. Exposure to the training materials of other developing countries is necessary. Training will need to be provided by a professional with extensive international experience in extension material design. An expatriate may provide the best training in this regard.

ANTICIPATED RESULTS

Strengthening the BoA's ability to obtain and communicate new information

Obtaining and Effectively Communicating Information

- Research contacts established
- Extension contacts established
- Awareness of on-going research developed
- Use of efficient and effective research methods increased
- Awareness of available appropriate technology developed
- Use of previously developed technology increased
- Awareness of other extension systems and methods developed
- Current extension methods incorporated into BoA system

Development of Communication Infrastructure

- Capacity for effective international communication established
- Flow of information between the BoA and international contacts increased
- Awareness of new and appropriate technology increased at regional level
- Effective and rapid communication between the region, zones and districts established
- Flow of information between the region, zones and districts increased
- Awareness of new and appropriate technology increased at zonal and district levels
- Farmer use of new and appropriate technology increased

Design and Production of Relevant Extension Materials

- Ability to produce appropriate extension training materials increased
- Appropriate extension materials produced and distributed to the DAs
- Number of DAs with extension materials increased
- Appropriate extension materials produced and distributed to farmers
- Number of farmers with extension materials increased
- Farmer use of BoA packages increased

ASSUMPTIONS

Obtaining and Effectively Communicating Information

- Appropriate technologies do, in fact, exist at the international centers or in other countries.
- Existing poor telephone and electrical service does not hinder technology location or dissemination.

Development of Communication Infrastructure

- Government issues the appropriate bandwidth allocations and grants any necessary permission.

Design and Production of Relevant Extension Materials

- Extension materials are an effective means of information dissemination.

Sub-Result 2: Increased income/diversity of sources of income due to ANRS policy changes, the multiplication of appropriate technologies, and the further development of multi-service cooperatives.

The generation of off-farm income in the 48 food insecure districts will not be an easy task, yet certain opportunities can be taken advantage of including: the land closure and Hillside Privatization Program that will provide farmers with a more environmentally sound source of fodder and income from its sale; voluntary land resettlement will take some of the pressure off of resources allowing for those remaining to be better off; technology multiplication holds the promise of employment generation, higher prices for seed and tuber producing farmers, and less costly technologies; and cooperatives can lead to reduced costs for inputs and higher prices for crops sold.

IV. DEVELOPMENT OF OPPORTUNITIES RESULTING FROM ANRS POLICY CHANGES

The BoA has recently been granted two policy changes that could have great impact on households in the food insecure districts. These policy changes are the establishment of the Hillside Privatization Program and the establishment of a policy permitting voluntary resettlement. Activities necessary to support the successful implementation of these policies are discussed below.

A. Land Closure and the Hillside Privatization Program

The closure of land, associated with 'cut and carry' fodder collection, is an environmentally sound and sustainable method of animal feed production. However, well-defined user rights to the fodder produced on the closed lands are necessary for community approval and the success of the closure. The ANRS's Hillside Privatization Program (HPP) provides the structure for both conservation based fodder production and the need for well-defined user rights. The HPP has recently been accepted by the ANRS Council and has been incorporated into the region's land-use policy. This progressive policy has great potential to; improve the life of the farm household, conserve and protect valuable soil and water, and to make long-term land tenure a reality in the ANRS.

The HPP appears to be both environmentally and socially sound and USAID will assist the BoA to build a technologically sound fodder production and management program based on these two positive attributes. A four-person team will be established to promote the development and proper management of land closures through the HPP. This team will focus on the management of land closures for the sustainable production of fodder. Research and training will take place in the following areas;

- the appropriate species composition and cultural practices needed to maximize fodder production in the various agro-ecological zones of Amhara,
- the development of the nursery techniques to produce these species.

The team will consist of an expatriate team leader and two local experts in fodder production and one nursery expert. The will be in operation for three years, and will conduct training of DAs and SMSs/Experts after knowledge on the production and management of these species has been developed.

Staffing, training, and equipment requirements can be found in Appendix A.

B. Voluntary and Managed Resettlement

Some areas of the ANRS are no longer able to support their current population because of environmental degradation and reoccurring drought. Many households in these areas are not able to produce enough food to support themselves and must survive year to year on relief food. The BoA's cereal packages are not working because of the limited and erratic rainfall in these areas; consequently, the possibilities of increasing the production of grain or other staple foods in these areas are limited.

The ANRS has agreed on a policy of voluntary and managed resettlement. In this program households who are no longer able to support themselves because of the degradation of the local environment may resettle in the less populated areas of the region. Households to be considered for resettlement will be from government defined degraded areas and relocation will be permitted in other government defined under populated areas.

Two local consultants will review the new policy to determine if voluntary and managed resettlement is socially, economically, and environmentally practical. Six months will be required to complete the task. During the first phase interviews will be conducted with government officials, policy makers, and families interested in resettlement. During a second phase areas for emigration and immigration will be identified. A procedure for the resettlement process will also be developed. During a third phase USAID funding will be provided to assist families relocate and will include: transportation, a basic housing unit, farm tools and equipment, and a one-year supply of improved seed and fertilizer.

ANTICIPATED RESULTS

Development of Opportunities Resulting from ANRS Policy Changes

Land Closure and the Hillside Privatization Program

- Appropriate fodder species identified
- Nursery techniques standardized for the fodder species
- Cut and carry management system for the fodder species developed
- Fodder production increased on HPP plots
- Erosion reduced on the HPP plots
- Land tenure via the HPP supported

Voluntary and Managed Resettlement

- Resettlement policy developed
- Areas for emigration identified
- Areas for immigration identified
- Procedure for resettlement developed

ASSUMPTIONS

Land Closure and the Hillside Privatization Program

- Legalization of the process is completed.
- Program continues to receive political support.

Voluntary and Managed Resettlement

- Legalization of the process is completed.

- Funding is provided by government or other sources.

V. MULTIPLICATION OF APPROPRIATE TECHNOLOGY

Many of the technological packages promoted by the BoA require the purchase and use of inputs that are not being produced at the district or zonal levels. A limited supply of these inputs is produced at the BoA's multiplication centers (improved seeds and tubers, forage species, and limited agricultural implements). The lack of some of these inputs has proven to a bottleneck restricting the adoption of a number of the BoA's most important technological packages.

The ANRS Extension System cannot be effective if the inputs for the technological packages are not available. The BoA has stated it would like the private sector to become involved in the multiplication of both the germplasm material and the farm equipment necessary for the implementation of its packages. USAID will provide incentives and the technical support necessary to promote the local private sector's involvement in germplasm and farm equipment multiplication.

Activities necessary to support the local production of farm equipment include:

- Selecting the specific equipment (plows, irrigation pumps, fuel-efficient stoves, etc.) and design(s) that best meet the needs of the farmers in ANRS.
- Building the capacity of local businesses to manufacturer the desired products. Capacity building would include loans for equipment, training on the use of the equipment, training on the manufacturing of the products and training on the management of a business.

Activities necessary to support the local production of seed, tubers, and livestock include:

- Selecting and contracting with 'progressive' farmers for the growing of improved seeds, tubers, and fodder species. The BoA would then certify the produced germplasm for sale to Exchange Centers at higher than market prices prevailing for the various commodities when used for food or feed.
- Credit for the establishment of several Germplasm Exchange Centers in the ANRS for the construction of storage facilities and other operating expenses including working capital to purchase the germplasm. The centers will be located in different agroclimatic zones and will purchase, store and sell the germplasm to farmers. These centers could be owned and managed by agricultural service cooperatives or private individuals.

ANTICIPATED RESULTS

Multiplication of Appropriate Technology

Farm Equipment

- Appropriate farm equipment produced locally
- Capacity of local businesses developed
- Increase in number of farmers using improved farm equipment
- Agricultural production increase via the use of farm equipment

- Additional income generated in rural areas

Germplasm Multiplication

- Appropriate improved seeds, tubers, and livestock produced locally
- Farmer income increased from production of improved varieties and breeds
- Availability of improved varieties and breeds increased
- Increase in number of farmers using improved varieties and breeds
- Increase in income/sources of income earned by farmers

ASSUMPTIONS

- Government relinquishes control of technology multiplication centers.

VI. STRENGTHENING OF COOPERATIVES

Agricultural service cooperatives are relatively successful in western Amhara in the purchasing and sale of agricultural inputs to their members and in the purchasing, storage, and sale of member produced grain. However, much work remains to be done in the area of cooperative development; especially in the food insecure areas of the eastern part of the region. This activity will build on the experiences of the on-going ACDI/VOCA Cooperative Strengthening program which is directed at secondary cooperative unions and their ability to provide management training and technical assistance to their member cooperatives. Support will also be provided to the Bureau of Cooperative Development to allow it to fully take part in the strengthening and management of cooperative businesses. Funding will also be provided for study tours by potential or actual cooperative members from the food insecure areas to the successful cooperatives of the region thereby exposing them what can be possible.

ANTICIPATED RESULTS

- Increase in the number of functioning cooperatives
- Increase in the number of farmers using cooperatives
- Increase in sale of grain by farmers to cooperatives
- Increase in the use of fertilizer sold through cooperatives
- Increase in the number of cooperatives involved in germplasm multiplication
- Improvement in the management of cooperatives

ASSUMPTIONS

- The new technologies produced and discovered will be sufficiently cost-effective to allow for the economic survival of the cooperatives.

Appendix A
Resource Requirements

Sub-Result 1: Support to the BoA

I. Formal Education Program

Post-Graduate Staffing Requirements

Term Length	Number	Length	Description of Assistance
Long Term (local)	one	5 years	Program Coordinator for Post Graduate & Undergraduate Program activities in Ethiopia
Long term (local)	one	5 years (on call)	Computer Systems Contractor
Short Term (local)	12	6 months each	Local researchers to advise Masters Students.
Short Term (local)	18	2 years each	Field-based Research Assistants (2 assistants per Ph.D. student & 1 assistant per Masters student)

Post-Graduate Program Equipment Requirements

	Coordination Office	Research Support	Total
Vehicles			
4wd	1	3	4
Motorcycle		3	3
Pickup		1	1
Computers	2	12	14
Internet Access	1	6	7
Office Rental			
Office Facilities/Equipment	1	3	4
Generator	1		1
Research Equipment & Supplies		as needed	as needed

Post-Graduate Logistics Requirements

Ph.D. Training Inputs	Number	Total
Eth.-US round trips by students	2-3 per student	6-9 round trips
US – Eth. Round trips by professors	2 per professor	6 round trips
Assistantships	3 students x 4 years	12 years
Tuition	3 students x 4 years	12 years
Local Travel by Student, Professor, and Research Assistants		

Masters Training Inputs	Number	Total
Tuition	12 students x 3 years	36 years
Assistantships	12 students x 3 years	36 years
Travel to Ethiopia by US professors	2 times per group x 4	8 trips
Local Travel by Student, Professor, and Research Assistants		

II. Upgrading the Woreta and Kombolcha Training Center Requirements

Woreta-

Technical Assistance

Term Length	Number	Length	Description
Long Term (expat)	two	2 years	Instructors during the Establishment Years
Short Term (expat)	as needed	3 months	Agriculture Curriculum Specialists as needed

Study Tour Requirements

Description	Number Participating
Flight to Honduras	3 BoA Representatives
Per Diem & Visas	3 BoA Representatives

Equipment Requirements

The following equipment requirements, unless otherwise indicated, are for 1000 students.

Office Equipment	Number
Computers	10
Desks Chairs Tables	20
Photocopier	1
Mass duplicator	1
Radio with Digital & Voice Capacity	1
Generator	1
Supplies - paper etc.	As needed

Library Equipment	Number
Tables & Chairs	200
Book Shelves	20
Books	as needed

Classroom Equipment	Number	Description
Overheads	10	for 10 classrooms
TV-VCR	5	for 5 classrooms

Student desks & chairs	375	for 375 students
Blackboards, etc.	15	for 15 classrooms
Instructor's desk & chair	15	for 15 classrooms

Dorm Equipment	**Number**
Beds	1000
Desks	1000
Chairs	1000

Cafeteria / Kitchen	**Number**
Tables	50
Chairs	500
Kitchen Supplies	as needed

Faculty Apartments	**Number**
Kitchen Supplies	for 4 apartments
Bedroom furniture	for 12 bedrooms
Dining / living room furniture	for 4 dining / living rooms

Agricultural Tools and Equipment	**Number**
Natural Resource Management	for 100 students
Irrigation	for 100 students
Agronomy	for 100 students
Bee-keeping	for 100students
Livestock	for 100 students
Others	for 100 students

Kombolcha-

Technical Assistance

Term Length	**Number**	**Length**	**Description**
Long Term (local)	one	2 years	Coordinator for Dryland Agriculture Curriculum Development for Kombolcha
Short Term (US)	as needed	6 months	Dry Land Agriculture Curriculum Specialists as needed
Short Term (local)	one	2 months	Trainer in Education Methods
Short Term (US)	one	2 months	Trainer in Farmer Training Methods

Facilities and Equipment

KTC facilities to be improved to house and train 100 DA and/or farmers per session.

Upgrading Facilities	Number	Capacity
Dormitories	2	50 each
Classrooms	4	25 each
Offices	4	2 staff per office
Library	1	30 students
Cafeteria/Kitchen	1	100 students
Ventilated pit latrines	10	10 students
Showers	10	10 students
Faculty Apartments	2	3 each
Sports Field and Equipment	1	

Vehicles	Number	Capacity
4wd	1	8 people
Bus	1	50 people
Mini van	1	12 people

Office Facilities/Equipment	Number
Computers	4
Desks Chairs Tables	8
Photocopier	1
Mass duplicator	1
Radio with Digital & Voice Capacity	1
Generator	1
Supplies - paper etc.	As needed

Library Equipment	Number
Tables & Chairs	50
Book Shelves	10
Books	as needed

Classroom Equipment	Number	Description
Overheads	2	for 2 classrooms
TV-VCR	2	for 2 classrooms
Student desks & chairs	100	for 100 students
Blackboards, etc.	4	for 4 classrooms
Instructor's desk & chair	4	for 4 classrooms

Dorm Equipment	Number
Beds	100
Desks	100
Chairs	100

Cafeteria / Kitchen	Number
Tables	10
Chairs	100
Kitchen Supplies	as needed

Faculty Apartments	Number
Kitchen Supplies	for 2 apartments
Bedroom furniture	for 6 bedrooms
Dining / living room furniture	for 2 dining / living rooms

Agricultural Tools and Equipment	Number
Natural Resource Management	for 25 students
Irrigation	for 25 students
Agronomy	for 25 students
Bee-keeping	for 25 students
Livestock	for 25 students
Others	for 25 students

III. Strengthening the BoA's Ability to Obtain and Communicate New Information

A. Educational Tours

Description	Number of Trips	Number Participating
Flights to Research Centers	3 Centers	12 (4 per center)
Flights to African Countries	2 Countries	8 (4 per country)
Flights to Asian Countries	2 Countries	8 (4 per country)
Per Diem & Visas	7 Trips	28 (4 per trip)

B. Requirements for the development of the infrastructure for effective communication.

Technical Assistance Required

Term Length	Number	Length	Description
Long Term (local)	two	one year	Radio Installation Technicians
Short Term (local)	two	6 months	Computer Systems Technicians

Training Requirements

Description	Number	Total
Internet and Computer Use	3 trainees per zone & region	33
Digital Radio and Computer Use.	2 trainees per district, zone, & region	118

Equipment Requirements

Description	Number
Solar/Battery Powered Radio with Digital & Voice Capacity	59*
Laptop computer and battery powered printer	59*
Internet Connection & Desktop Computer	12**

* To be provided to each district, zone and the region.
** To be provided to each zone & to the regional office.

C. Requirements to improve ability to create and produce relevant extension materials

Technical Assistance Requirements

Term Length	Number	Length	Description
Long Term (expat)	1	1.5 years	Extension Materials Development Coordinator
Long Term (local)	2	3 years	Extension Materials Designers

Study Tours

Description	Number of Trips	Number Participating
Flights to African Countries	2 Countries	8 (4 per country)

Equipment Requirements

Description	Number
4wd Vehicle for Coordinator	1
Office Facilities/Equipment	1
Computers	3
Internet Access	1
Black & White High Volume Duplicator & Supplies	1
Color High Volume Duplicator & Supplies	1
Pamphlet Materials and Supplies	as needed

Sub-Result 2: Increased Income/Diversity of Income

I. Development of Opportunities Resulting from ANRS Policy Changes

A. Hillside Privatization Program

Technical Assistance

Term Length	Number	Length	Description
Long term (expat)	1	3 years	Dryland Fodder Production Expert
Long Term (local)	3	3 years	Fodder and Nursery Experts

Training

Description	Number	Total
Management of Cut and Carry Systems	2 SMS per district	96
	10 DAs per district	480
Nursery Production of Fodder Species	2 SMS per district	96
	10 DAs per district	480

Equipment

Description	Number
4wd Vehicle for Fodder Expert	1
Motorcycles	3
Office Facilities/Equipment	1
Research and Nursery Equipment	as needed

B. Development of a Voluntary Resettlement Program

Technical Assistance Requirements

Term Length	Number	Length	Description
Short Term (local)	2	6 months each	Policy Development Advisors

II. Requirements for Multiplication of Appropriate Technology

Technical Assistance

Term Length	Number	Length	Description
Farm Equipment Production			
Long Term (local)	one	3 years	Farm Equipment Development Coordinator
Short Term (expat)	as needed	6 months	Equipment Specialists for Design and Production
Short Term (local)	as needed	2 years	Trainers in Manufacturing & Equipment Operation and Business Management
Germplasm Exchange Centers			
Short Term (local)	as needed	2 years	Trainers in the Production of Seed, Tubers and Livestock

Training	Number Trained
Farm Equipment Production	
Equipment Operation	50 business persons

Business Management	50 business persons
Germplasm Exchange Centers	
Production of Seed and/or other crops	1000 farmers
Production of Livestock and/or poultry	1000 farmers

Equipment

Description	**Number**
Farm Equipment Production	
Loans for Manufacturing Equipment	50 small business
Germplasm Exchange Centers	
Exchange Centers	9 Centers
Warehouses for Seed and Tuber Storage	18 Warehouses

III. Cooperative Strengthening Requirements

Technical Assistance

Term Length	**Number**	**Length**	**Description**
Long Term (local)	2	2 years each	Trainers in Cooperative Management

Training

Description	**Number Trained**	**Total**
Cooperative Management Training	4 each in the 48 districts	192
Exposure Trips	2 each for the 48 districts	96

Appendix B

Training Timeframe

Training Schedule

Ph.D. Program

Year 1	Year 2	Year 3	Year 4	Year 5
In USA 3 students	In USA 3 students	In Ethiopia 3 students	In USA 3 students	

Masters Program

Research Topic # One

Year 1	Year 2	Year 3	Year 4	Year 5
Class 3 students	Class/Res. 3 students	Research 3 students		

Masters - Research Topic # Two

Year 1	Year 2	Year 3	Year 4	Year 5
	Class 3 students	Class/Res. 3 students	Research 3 students	

Masters - Research Topic # Three

Year 1	Year 2	Year 3	Year 4	Year 5
		Class 3 students	Class/Res. 3 students	Research 3 students

Masters - Research Topic # Four

Year 1	Year 2	Year 3	Year 4	Year 5
		Class 3 students	Class/Res. 3 students	Research 3 students

Undergraduate Training

Bachelors Schedule

Year 1 & 2	Year 2 & 3	Year 3 & 4	Year 4 & 5
9 students	9 students	9 students	9 students

Home Agent Schedule

Year 1 & 2	Year 2 & 3	Year 3 & 4	Year 4 & 5
10 students	10 students	10 students	10 students