Strengthening Human Capacities for Implementing a New Demand-Driven Extension Approach in Eritrea

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Abstract
The new government in Eritrea, acting consistently with its philosophy of decentralization, recently undertook a broad-based participatory process that resulted in the country’s first comprehensive Agricultural Sector Review. That review identified needs for coordinated donor support to develop agricultural research and extension. In the early months of 2000, during the course of field visits, a strategy team made assessment and problem analysis of the prevailing farming conditions in order to recommend possible extension approaches. Eritreans chose the term “Farmers’ Advisory Service” (FAS) as the name for their new extension service. In choosing FAS, Eritreans were recognizing the importance of positively influencing human behavior as a means for bringing about change. The new extension approach is intended to be participatory, grassroots, and focused on demand generated by farmers. It is designed to relocate more of the most qualified extensionists to jobs that allow them to have maximum accessibility by farmers. Perhaps most urgently, Eritrea needs a human capacity approach that builds more equity for women. Another priority is to improve agricultural and extension education, especially at the diploma level. All of the formal and nonformal educational approaches must be tailored to prepare extension workers with social skills to complement their competence in relevant technical knowledge and skills. Eritreans have reason to feel optimistic about improving their country if they can be successful at equipping an extension work force that is increasingly practical, more able to work in interdisciplinary teams, and better resembles the diversity of the populations being served. Some of the information in this paper was adapted, with permission, from documents prepared by the author for the Ministry of Agriculture in Eritrea in collaboration with the University of Asmara in Eritrea and with the assistance of personnel from DANIDA and FAO.
Introduction

The liberation struggle in Eritrea (1960-1991) was the background of rapid post war reconstruction that included a highly decentralized approach that devolved power to the regional, sub-regional, and local government levels. As a result of devolution, the new central government is now responsible for formulation of national policy, developing and assessing standards, collecting and analysing national data and providing technical assistance to the regions. Line ministries at the regional level, who were previously accountable to the central ministries, are now more accountable to the regional administrators. Revenue collection and budget plans are made by the regional administration, which are sent to central government for approval and disbursement.

The new government in Eritrea, acting consistently with its philosophy of decentralization, also undertook a broad-based participatory process that resulted in the country’s first comprehensive Agricultural Sector Review. The review identified needs for coordinated donor support to develop agricultural research and extension. Eritrea’s solid record of sound management of a preceding generation of transition development funds combined with a solid emphasis on infrastructure development, capacity building, and input supply was enough to attract donor support for various sub-sectors of agricultural development. This paper summarizes the findings and analysis of a research process that was undertaken, with assistance from two international development agencies, to strengthen human capacities for Eritrea’s new demand-driven extension approach.

Agricultural Extension in Eritrea

Eritrea, with a total land area of 12.4 million hectares, has about 3.2 million hectares (26%) of land that is suitable for agriculture use with only about 400,000 hectares (12.5%) currently under cultivation. Almost all of the country’s crops (95%) are produced under rainfed conditions and using traditional methods of cultivation. Large areas of land are available for cultivation, with great potential for irrigation in some parts of the country, giving hope for both realizing productivity increases through both putting more land under cultivation and getting higher yields on existing farms. Restoring agricultural production in Eritrea’s war ravaged economy will not be an easy task. There was indiscriminate cutting of trees by both the Ethiopian troops, and then the Eritreans themselves, during the long years of war. Consequently, a fast decline of infiltration and loss of soil cover resulted all over the country. This in turn caused a decline in crops and forage yields, siltation of dams, water table imbalances, and salinization and alkalinisation of fertile soils. After liberation, legislation and law enforcement measures were put in place to increase forest and vegetation cover resulting in millions of trees planted on hill sides for protection, but the damage was already done.

The history of modern extension in Eritrea dates from the early 1970s when the government of Ethiopia (to which Eritrea was still attached) received its first international grants and technical support for the development of smallholder agriculture through foreign development agencies. This formal extension model was a demonstration approach focused on contact farmers and the diffusion of new cultivation packages similar to what was being used in Ethiopia. The impact of technology diffusion was minimal because of the severe disruptions of the liberation struggle combined with the poor agro-climatic adaptability of most of the technologies being promoted. The major technology success story was extension
of new cultivars for taff and barley along with increased inorganic fertilizer usage in the Central Highland Zone.

Operating in parallel to the formal extension services in Eritrea, the Eritrean Peoples Liberation Front (EPLF), formed an agricultural commission that promoted technology dissemination targeted to benefit people involved in the liberation struggle. The EPLF agricultural activities were undertaken in controlled areas utilizing some improved seeds acquired from the major regional International Agricultural Research Centers and NGOs. Elected village councils were the base mobilization units for the wartime crop extension and production programs. This grassroots network was one of the secrets to the struggle’s success, providing strong organizational linkages with the population including highly developed communication channels upwards and downwards through councils at the district, provincial, and national levels. In the immediate post-war period, this grassroots network was transformed into a local government structure under the authority of the Ministry of Local Government, which continues to occupy an important place in the cabinet. The EPLF’s Agricultural Commission, which included a number of B.Sc. and M.Sc. trained agricultural specialists, worked with the village councils to introduce low input investments, including imported varieties of more drought tolerant and disease resistant seed, planting in rows, and traditional water harvesting techniques. In contrast to the official formal system of extension, the EPLF model was highly participatory with significant input provided by village councils in identification of needs and assessment of agricultural technologies through demonstration activities.

**Problem Analysis**

In the early months of 2000, a strategy team (comprised of women and men from both inside and outside of Eritrea) made assessment and problem analysis of the prevailing farming conditions in the course of making comprehensive field visits. During the course of the field visits, suggestions were solicited from a wide array of individuals from both within the Ministry of Agriculture and elsewhere. Some of the results gained from a field-based problem analysis, highlighting the major problems and the corresponding possible solutions, are presented in the following table:
<table>
<thead>
<tr>
<th>Identified Problems</th>
<th>Proposed Solutions</th>
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| **Appropriate technology is not available**  
• Farmers and farming conditions are not sufficiently considered.  
• Technical viability, economic feasibility and social acceptability of new technology and agronomic practices are not measured | **Access information from all sources**  
• Improved linkages between farmers, extension agents and researchers  
• Applied and adaptive participatory research at field level  
• Field trials and farmer managed trials  
• More technology options for farmers |
| **Too many functions of extension agents**  
• Regulatory functions  
• Commercial service providers (input supply, credit, campaigns of public interest) | **Separation of functions**  
• Regulatory, law enforcement and public campaigns under local administrations  
• Veterinary and related services to operate within a private enterprise framework  
• Input supply, marketing/processing as private enterprise  
• Credit under specialised banks or credit institutions |
| **Low level of education and training of extension agents combined with low level of farmer education**  
• Extension agents, particularly those with only secondary school qualifications, not responding to farmers’ need  
• Insufficient use of proper extension methods and approaches  
• Ad hoc training not defined according to identified skill gaps | **Education and training of teams of farmers at grassroots**  
• Well-defined job descriptions and profiles as basis for skill gap identification  
• Bring education and training to the field.  
• Client responsive agricultural education  
• Distance education  
• Use experiential learning approaches |
| **Little gender responsive programming**  
• Relatively few well-trained female extension agents  
• Many female-headed households with insufficient farming skills  
• Few women farmers participate in agricultural training programs  
• Cultural barriers for women participation in training activities  
• Many consider farming as a male occupation | **Priority to female extension workers in upgrading skills through education and training.**  
• Special training and education programmes for women to overcome cultural barriers  
• Reorient Home Economics to give more priority to income generation activities  
• Institutionalize gender in the Ministry of Agriculture |
Eritrean Agricultural And Extension Education System

When the Ministry of Agriculture was created in 1994, they selected a large cadre of EPLF ex-fighters to undertake assignments as field level extension staff on two-year trial contracts. Almost all of these new recruits had less than a high school general education and no training in agriculture. The existing Ministry undertook a special six-month long crash course on the fundamentals of extension work to get these new recruits up and running. Because of a high number of female new recruits, the overall ratio of the Eritrean extension system at the time shifted to approximately 40% women. There was supposedly one available extension agent for every 2-3 villages (300-350 households) at that point in time. The limited training and hasty preparation of this cadre of new recruits has evolved into an important human resource challenge facing those trying to introduce the new demand-driven extension approach described later in this paper.

In addition to bringing the ex-fighters into the extension delivery system in 1994, the Ministry began an intensive program to upgrade extension workers through other appropriate training programs. A center for short courses of two weeks, on average, was built in the capital city, Asmara. Other staff members were sent to B.Sc. and M.Sc. degree training programs at foreign universities, both in other African countries and elsewhere. An inventory, undertaken by the author during his assignment in Eritrea, revealed that the Ministry of Agriculture had over 1000 employed staff listed in its database in early 2000. It was possible to identify 610 individuals, out of the 1000 total employees, who appeared to have one or another type of extension-related job title. A total of 127 females were identified amongst these 610 extension-related staff (20.8%). The extension-related staff had the following educational backgrounds:

<table>
<thead>
<tr>
<th>Educational Background</th>
<th>Number</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Grade 6-11</td>
<td>57</td>
<td>09%</td>
</tr>
<tr>
<td>Grade 12</td>
<td>58</td>
<td>10%</td>
</tr>
<tr>
<td>Grade 12 plus special short course</td>
<td>173</td>
<td>28%</td>
</tr>
<tr>
<td>Grade 12 plus 2 years (Diploma)</td>
<td>148</td>
<td>24%</td>
</tr>
<tr>
<td>Grade 12 plus B.Sc.</td>
<td>137</td>
<td>22%</td>
</tr>
<tr>
<td>Grade 12 plus B.Sc. and M.Sc.</td>
<td>25</td>
<td>04%</td>
</tr>
<tr>
<td>Grade 12 plus D.V.M</td>
<td>12</td>
<td>02%</td>
</tr>
</tbody>
</table>

University of Asmara

The University of Asmara (UA) is currently the only institution of higher education in Eritrea. Amongst others, the University has a College of Agriculture and Aquatic Sciences (CAAS). The CAAS currently offers four-year B.Sc. degree programs in Marine Biology and Fisheries, Plant Sciences, Soil and Water Conservation, and Animal Sciences. A two-year Diploma in General Agriculture is also offered. Students in the B.Sc. program study for one year in university general studies before undertaking an additional three years of studies in CAAS. Students in the Diploma program are enrolled for two years of study in CAAS and are eligible for advanced placement into one of the B.Sc. degree programs upon successful completion of the Diploma (with high marks). A joint steering committee has been formed between the CAAS and Ministry of Agriculture. The purpose of the steering committee is to make formal or institutional links that contribute to relevance of academic programs. The private sector is also to be represented on the steering committee, but its presence is very weak at the moment.
Agricultural Vocational Schools

The Hamelmalo Agricultural School was launched in October 1999. The school property is a former Italian fruit farm that has not been properly maintained and managed since the 1970s. It used to be known for the best oranges and mandarins in the area. The site has been developed in order to train ex-fighters followed by a decision to transform the site into a long-term training facility. In October 1999, the school admitted 96 students (81 men and 15 women). The total capacity of the school is 250 students. Hamelmalo Agricultural School is teaching general agriculture during the first year and has plans to stream students into specialization during the remaining two years. Specialization will be in Agricultural Mechanics, Plant Sciences, Animal Sciences, and Soil Sciences. The Ministry of Agriculture will be the primary employer for the other 75% of students (with an estimated 10% going into the private sector). They are also planning to provide short courses for farmers from that area. The school has a 60 hectare farm with 15 hectares currently under cultivation and irrigation. Students are supposed to do 60% practical work, but are not currently able to do over 50% due to lack of school farm facilities.

A second vocational school, the Hagaz Agricultural School, is located about a 45-minute drive away from the Hamelmalo School. Considerable financial support for the school comes from the Catholic Missionary Service in Europe, even though the admissions and monitoring come from the Ministry of Education. They currently have 53 students at the intermediate level (grade 10 for a three-year programme) and 50 students at the lower level (grade 8 for two-year programme). Hagaz Agricultural School is also planning to have education for 25-30 area farmers (two months average length of course). A separate housing and teaching complex has been built to accommodate the farmers during their training periods. As with Hamelmalo, Hagaz is teaching general agriculture science the first year and plans to have students specialize in Animals, Soil and Water, Plants, and Agriculture Mechanics during the subsequent years. The two-year training is designed to help them acquire practical training and skills for entry into the workforce. The facilities at this school are excellent, with adequate classroom, library, and laboratory space. The school will even have a complete student computer room with 25 units. The farm laboratories are also excellent, utilizing an extensive drip irrigation system. The school is experimenting with grape production, with plans for a winery. Dairy, poultry, and rabbit facilities are also under construction. The school has considerable workshop capacity for study of Agricultural Mechanization as well. Student dormitories and eating facilities have sufficient capacity for the intended student and farmer populations.

Adult Education & Literacy

The Adult Education Department operates a 10-kilowatt radio transmitter, which has a broadcast radius of about 200 kilometres. About one-third of the 100 literacy centers are being reached by radio. Radio receivers have been provided to these centers and listening groups have been organised by facilitators. One of the goals is to upgrade the transmitting capacity to 50 kilowatts. There are also plans to use audio cassette players and recorded programmes at centres beyond the reach of the radio transmission. Four 30-minute programs are broadcast twice a week in Tigrgina and Tigre. About two hours per week is devoted to agricultural programming. The Ministry of Education operates basic and intermediate literacy training programs at the village level. Teachers, many recruited and trained during their national service year, take up residence in villages and conduct intensive training
programmes. Reading materials are also produced and made available for the newly literate readers. A need has been expressed for more materials to be made available for new readers in agriculture and rural development content areas. Most of the people attending literacy classes are farmers.

**Primary & Secondary Schools**

Approximately two-thirds of the primary schools (grades 1-5) are situated in rural areas. Agriculture is being taught as an integral part of Biology, Science, and Geography rather than as a separate subject. Instruction at the primary level is in the student’s primary language. After primary school (grades 6-7), children go to the middle school level (Junior Secondary School). Subjects taught include English, Arabic/Tigrigna, general science, mathematics, geography, history, physical education, music/songs, drawing/arts, and civics/moral education. Agriculture is not taught as a separate subject, but integrated into general science and geography. At the end of the basic cycle of primary and middle schools, children can enter basic level skills training in one of the Skill Development Centres or go to one of the Senior Secondary Schools (grades 8-11). Some of the secondary schools have experimented with an agriculture stream in their curriculum, but no national curriculum in agriculture currently exists.

**Eritrea’s New Extension Approach**

Eritreans chose the term “Farmers’ Advisory Service” (FAS) as the name for their new extension service. In this context, FAS can be described as an extension approach designed to facilitate the better use of the country’s natural resources and the farmers’ great potential for increased agricultural production by empowering them to take an active role in decision making, co-financing and co-ownership for long-term sustainable development of agriculture.

In choosing FAS, Eritreans are recognizing the importance of positively influencing human behavior as a means for bringing about change. The new approach is intended to be participatory, grassroots, and focused on demand generated by farmers. In the FAS approach, interacting with farmers is understood to be the most important point of leverage for stimulating the desired changes. The new approach also assumes, of course, that the interests of farmers and the general public are to a great extent one and the same. While the FAS concept has not been imported from any particular country or area; other recognizable variations of FAS can be found in Denmark, Uganda, India and elsewhere. The Eritrean approach to FAS is intended to uniquely pull in the best extension ideas from Africa, Asia, Europe, North America and the rest of the world in order to put them to work to address the challenge of boosting Eritrean agriculture.

In general terms, the intended outcome of FAS is improved food production and enhanced food security through a partnership between farmers and extension providers, aiming at sustainable use of natural resources and improved technology and agronomic practices. The present low productivity of crops and livestock in Eritrea is the starting point for any new effort in the area of agricultural extension. The FAS is therefore aiming at a country wide improvement at a low cost with appropriate technology, rather than spectacular improvements at high cost and high technology that might not be affordable and accessible for the majority of farmers. Even in a relatively good agronomic year, as was 1998, more than 60% of the rural areas in Eritrea were deficient in basic food and experienced low food
security. Working to build an adequate level of food self-sufficiency and food security is the first goal that will be undertaken under FAS, followed by the intention of producing a surplus for sale to outside markets. The new FAS, as envisioned, will probably need a time frame of about twenty years for full development and implementation due to the variety of farmers and farming conditions in the country.

**Strengthening Human Capacities**

Perhaps most urgently, Eritrea needs an agricultural and extension education approach that builds more equity for women. Currently, women make up only 20% of extension (and many of them are Home Agents). The educational levels of women are among the lowest in the Eritrean Extension system. Of the women in extension, 69% have been educated to grade twelve or less and only 8.7% of current extension workers are women with B.Sc. degrees.

Another priority is to improve agricultural education at the diploma level. This includes making sure that once diploma-holders complete at least two years of successful field experience they can be considered for continuing educational advancement. The agricultural diploma program should not be viewed as a terminal qualification but one that offers opportunities to upgrade from a diploma to a B.Sc. degree. In order for extension to be seen as an attractive career, the best and brightest extension workers must be given sufficient incentives so that they have a career pathway that motivates them to excel in their field assignments. If a continuing program for upgrading to the B.Sc. degree could be conducted for a reasonable length (two-year maximum), the extension workers would enjoy the added incentive of not being away from their jobs and families for excessive periods of residential study.

In addition, the new Eritrean extension approach makes a serious effort to move more of the most qualified extensionists to jobs that allow them to have maximum accessibility by farmers. Currently, the Ministry of Agriculture has most of the B.Sc. degree holders assigned to the regional or national offices. The extension offices closest to farmers, the sub-regions, are mostly staffed with individuals who possess secondary school or lower qualifications.

In summary, small farmers need advice in many different disciplinary areas, including the social dimensions and interdisciplinary problem-solving. All of the formal and nonformal educational approaches must be tailored to prepare extension workers with social skills to complement their competence in relevant technical knowledge and skills. Eritreans have reason to feel optimistic about the future if they can be successful at equipping an extension work force that is increasingly practical, more able to work in interdisciplinary teams, and better resembles the diversity of the populations being served.

**References**


