

THE ROLE OF AGRICULTURAL EXTENSION IN POVERTY REDUCTION OF RURAL ERITREA

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ABSTRACT

Agriculture is the backbone of the Eritrean economy and it is the livelihood of the vast majority of the Eritrean people of whom more than 70 per cent of the population depends on agriculture and its allied fields for income and employment. The productivity in Eritrean agriculture is low because of the long devastating war, frequent droughts, and serious land degradation. In subsistence farming, farmers use their own traditional farming practices as well as inputs and produce mostly for family consumption. In order to improve the situation, agriculture extension programme to the farmers is imperative. An attempt is made in this paper to discuss the agriculture extension and its impact in the reduction of poverty in Eritrea. It provides the various factors that affect the efficiency of agriculture extension system. The paper also highlights the incidence of poverty in Eritrea and provides the implications for the improvement of productivity in agriculture.

Introduction

Eritrea got its independence in 1991 after 30 years freedom struggle. It is located in the Horn of Africa, bordered in the North and West by Sudan, in the South by Ethiopia and Djibouti and in the East by the Red Sea. The area size of the country is 125,000 square kms with an estimated population of about 4.2 million of whom some 1 million Eritreans live abroad, 50 per cent of the population is less than 18 years old and 75 per cent of the total population lives in rural areas (Rena, 2006). The population is culturally, linguistically and religiously diverse with nine major ethnic groups consisting of both the Christians and the Muslims. Eritrea has six administrative zobas (provinces/regions). Since its independence, the country has been undertaking various developmental programmes in rebuilding its war-torn economy particularly the agriculture sector (Rena, 2004³:34). Agriculture is the backbone of the economy. The sectoral composition of the economy: agriculture 20 per cent, industry 29 per cent, and services 51 per

cent. The per capita income is \$ 909 (wikipedia online encyclopedia, 2007). Crop cultivation, animal husbandry and related trade activities are the main income sources. The population is engaged in peasant farming, growing sorghum, barley, *taff*, maize, wheat, fruits and vegetables as food crops, while producing cotton, coffee, and oilseeds as industrial crops. Livestock development, dairy, meat and meat products, and sea fisheries also play significant roles in the economy (Rena, 2004³:33). Less than 5 per cent of the total land area or about 440,000 hectares is cultivated and approximately one-third is desert or semi-desert and is unsuited for fanning or livestock rearing. There are about 600,000 farm households. About half of the cultivated area is found in the highlands where population density per acre of cultivated area is high and localised scarcity of arable land occurs. The average size of the landholding is less than a hectare. Meanwhile, a substantial area of rainfed land in the southwest lowlands is sparsely populated and is used primarily for grazing but is also

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suitable for crop cultivation. This relatively fertile land has stayed under-populated because migratory movements, which had started in the sixties, were slowed to a trickle during the war. Eritrea is a drought-prone country. In normal years, rainfall varies from 400–600 mm in the highlands and southwestern lowlands to 200–300 mm in the coastal areas. During drought, rainfall may be only 200 mm in the highlands and less than 100 mm in the lowlands (World Bank, 1994:1).

Although, agriculture has a lot of scope to develop, it is not being fully utilised. For example, out of total arable land of 2.1 million hectares only 440,000 hectares is under cultivation. The livestock, which are commonly available, include: sheep, goat, cattle and camel. Live animals constitute important export item. The livestock export also increased from 1,525 to 4,625 animals during the period 1992–2003. Besides, export of hides and skins increased substantially in recent years (Rena, 2006).

Almost all the developing economies have an experience of extremely low level of labour productivity and Eritrea is not exceptional to this trend. Relatively low levels of labour productivity characterise Eritrea. The productivity in Eritrean agriculture sector is very low because of the long devastating war, frequent droughts, and serious land degradation and above all due to subsistence farming practised by tradition bound farmers. A very little technology also involved in the farming. In subsistence farming, farmers use their own traditional farming practices as well as inputs and produce mostly for family consumption. Besides, the external inputs like: high-yielding varieties of seeds, fertilisers, chemicals to control pests and diseases, machineries, improved methods of husbandry are not used. These factors collectively perpetuate low productivity in agriculture and/or animals (Rena, 2005: 197). However, it has been clearly stated in the Macro-Policy of Eritrea that: "the improved agricultural production through development of irrigated agriculture, and by enhancing productivity of peasants, pastoralists and agropastoralists (GSE, 1994)".

Poverty has been widespread and human development is limited; UNDP's Human Development Indicator ranks Eritrea at 157th out of 174 countries—marginally ahead of Ethiopia—but well below the Sub-Saharan Africa average (UNDP 2006). One of the most pathetic features of the Eritrean economy today is that a majority of its populace are living in a state of destitution while the minority are living in affluence. As part of its macro policy, the food security and reduction of poverty have been amongst the most pressing objectives of the Eritrean government. Agricultural research and technology and its dissemination and adoption are the keys to increase the productivity of agriculture and thus reduce poverty. Agricultural research produces knowledge and materials, which is used as technology. On the other hand, the farmers who use these technologies are critical for increasing agricultural production. It is to be noted that there are about 600,000 small holder farmers in Eritrea using basic and primitive methods of apiculture techniques in the production process (Ministry of Agriculture, 2002).

The World Bank expressed its concern on subsistence agriculture in a statement that 'without rapid progress in small holder agriculture throughout the developing world, there is little hope either of achieving long-term stable economic growth or significantly reducing the levels of absolute poverty. The fact is that very little has been done in the past to increase the productivity of subsistence agriculture' (World Bank, 1994).

Since its independence, the government has exerted efforts to develop subsistence agriculture and thus achieve food security. Like most African countries, Eritrea is also a victim of the problem of food insecurity. In spite of the efforts, Eritrea still remained as a food deficit country (UN, 1998; Rena, 2005). It is estimated that the food requirement of about 3.5 million populations at the rate of 170 kg per capita per year would be about 600,000 metric tonnes (MoA, 2002; GSE, 2004). Against this requirement, Eritrea has been producing about one-third of it even during good monsoon years. This is a great

concern and that is why the government has given priority to enhance agricultural production. The per hectare yield of crops, production of milk per cow are quite low when compared to that of developing countries in sub-Saharan Africa.

Objective and Method of the Study: The main objective of the study is to know the impact of agriculture extension in the development of agriculture and minimising rural poverty in the country. As part of the study, data were gathered from secondary sources. The secondary data were collected from various reports such as: Ministry of Agriculture, Poverty Reduction Strategy, National Statistics and Evolution Eritrean government, and World Bank, FAO reports both published and unpublished.

Incidence of Poverty

The poverty has no geographical boundary, which is seen in all parts of Eritrea; both in rural and urban regions (Table 1). Although, the incidence of poverty is much higher in the rural areas than in the urban centres, the urban slum-dwellers form one of the more deprived sections in Eritrea (Government of Eritrea, 2004). The poor are those who are unable to obtain an adequate income, find a stable job, own property or maintain healthy living conditions. They also lack adequate level of education and cannot satisfy their basic health needs. As such, the poor are often illiterate, in a state of poor health and have a short life span. They have limited or no access to basic necessities of life, such as food, clothing, and shelter. They are unable to meet social and economic obligations. They lack skills and gainful employment and they have few (if any) economic assets and sometimes lack self-esteem (World Bank Report, 1990).

Poverty is a form of deprivation. It exists when there is lack of means to satisfy critical needs. Poverty may be absolute or relative. The definition of absolute poverty focuses on the inability of an individual or household to consume a certain minimum of basic needs, while that of the relative poverty compares the welfare of those with the lowest amount of

resources with others in the society (Ogwumike, 1996). Basic needs are universal, they cut across cultural, social, racial, and other differences or barriers, basic needs are thus common to humanity (Ogwumike, 1987). It is believed that a family is poor, if it spends a very high percentage of its income on basic needs such as food, clothing, housing, health care and transport with very little left for a rainy day (World Bank Report, 1990).

Although data on the subject are extremely limited, proxy indicators would suggest a relatively high level of overall poverty defined to include income as well as access to and utilisation of public services. Since then there has been some improvement until the border conflict with Ethiopia started in May 1998. The Government has indicated its intention to undertake a poverty assessment as a basis for the preparation of a poverty reduction strategy. The government of Eritrea has been working hard to alleviate poverty from the country. In line with this, the National Statistics & Evaluation Office (NSEO) conducted "Household Living Standard Measurement Survey" in 2003 with a view to getting a thorough understanding about the nature, extent and causes of poverty. In the meantime, three other studies on poverty were also completed in the country. These are 1] Participatory Poverty Assessment study, 2] Demographic & Health Survey, and 3] Rural Livelihood Security Assessment study. Based on these, NSEO had produced a report entitled "Dimensions of Poverty in Eritrea".

A rapid appraisal undertaken in 2003 estimated that 66.4 per cent (rural 64.64 and urban 70.32) of the population of Eritrea were living in poverty. The highest concentration of the poor was found in the highlands followed by the urban areas. The population in the lowlands is relatively better off, mostly due to access to prime agricultural land and lower population density. The Report also mentioned about "Extreme Poor" category. Like many other countries, in Eritrea also poverty is calculated based on the money value and classified as Below the Poverty Line (BPL). Accordingly, Nakfa 240 per

capita per month is the BPL line and Nakfa 150 per capita per month is the money value for the

ultra poor. The incidence of poverty in Eritrea is depicted in Table 1.

Table 1 : Incidence of poverty (head count) in Eritrea

Rural/Urban	% of Population	% of BPL Population	% of Extreme Poverty (Out of total BPL Population)
Rural	68.80	64.64	38.90
Urban	31.20	70.32	32.65
Total	100.00	66.40	36.97

Source- Report on Dimensions of Poverty, March 2003, Asmara.

Livelihoods in Eritrea are vulnerable to climatic conditions as well as to war. The border war with Ethiopia during 1998-2000 directly affected the livelihoods of more than 1 million people who were forced to flee due to advancing Ethiopian army. The war adding particular burden on women and children created large numbers of female-headed households and orphans (UN, 2001: 8-10). Another factor inducing poverty is due to increase in the prices of primary produce including foodstuffs on account of making it more difficult for many families to afford a well balanced diet. As a result of this, chronic malnutrition remains at unacceptable high levels. Further, limited access to social services perpetuates poverty and reduces the overall capacity of the country to develop.

Agricultural Extension and Rural Poverty: After 30 years of struggle to achieve independence, Eritrean society is faced with the challenge of rebuilding and developing not only its physical and economic infrastructure, but also its human potential. The development of human potential requires the creation of an environment in which all can enjoy long, healthy and creative lives through equal access to, and participation in the economic, social, and cultural life of the nation (UN, 2001:9).

As stated earlier, there are about 600,000 farm households. Most of them are small landholders and carry out subsistence agriculture with traditional inputs and practices. Agricultural ex-

ension aims at enhancing this human resource by educating farmers and updating their knowledge, skills and entrepreneurial behaviour to apply science into agriculture. Agricultural extension assists rural people to cultivate the agriculture land efficiently. It is a common experience that farmers get low yield and are not aware of new practices and methods to increase the productivity. It is believed that the agriculture extension programmes help such farmers to enhance the productivity.

Population density and land use pattern in Eritrea vary by region. Table 2 shows population size, amount of cultivated land and cultivated land per rural person by zoba (the term used to refer to administrative regions in Eritrea). The zoba Debub, with a slightly more than a million people, accounts for about one-fourth of the country's total population. Zoba Gash-Barka has the largest cultivated land, 217,600 hectares, and also the largest cultivated land per rural person, 0.29 hectare. Overall, the cultivated land per person for the country is 0.12 hectare (FAO, 2000; Rena, 2004b: 112).

The aggregate crop production has increased to 238,429 metric tonnes from 96914 metric tonnes between 1996-1998. Average yields of the agglomerated crops increased from about 0.26(t) quintals per hectare in 1996 to about 0.94 (t) quintals per hectare in 1998 (FAO, 2000:13).

Table 2 : Cultivated land and population distribution in the year 1999

S.No.	Zoba	No. of sub-zobas	Population (000's)	Rural population (000's)	Cultivated land (000's) hectares	Cultivated land per rural person	Cultivated land per person
1	Anseba	10	570.2	562.7	58.1	0.10	0.10
2	Debub	11	1014.8	976.3	128.1	0.13	0.13
3	Gash-Barka	14	790.8	754.8	217.6	0.29	0.28
4	Maekel	4	726.6	188.5	27.8	0.15	0.04
5	N.Red Sea	9	558.5	567.2	40.8	0.07	0.07
6	S.Red Sea	4	273.9	223.9	0	0.00	0.00
	Total	52	3,898.8	3,273.4	471.9	0.15	0.12

Source: Ministry of Agriculture, Government of Eritrea, Agricultural Sector Policy and Strategy Framework: Background and Context Development and Management (November 2002), Asmara, p.16.

Note: The cities of Dekemhare, Assab, Tesseney, Massawa, and Keren, have been excluded from their respective zobas. However, the capital, Asmara, is included in the figures shown for zoba Maekel.

Table 3 : Production (metric tonnes) and area (hectares) sown by main crops during the period 1992-1999

Year and Production	Cereals	Pulses	Oilseeds	Total
1992 Production	251,300	6,000	5,100	262,400
Area Sown	263,100	8,800	12,700	284,600
1993 Production	86,850	1,530	9,670	98,050
Area Sown	338,500	15,000	42,100	395,600
1994 Production	253,400	4,370	8,800	266,570
Area Sown	330,310	7,950	24,700	362,960
1995 Production	122,460	6,122	11,696	140,278
Area Sown	298,432	21,935	29,073	349,440
1996 Production	85,358	6,369	5,187	96,914
Area Sown	322,179	14,127	35,050	371,356
1997 Production	99,080	1,209	2,624	102,913
Area Sown	374,255	5,798	13,350	393,403
1998 Production	457,810	3,275	6,792	467,877
Area Sown	477,043	6,942	13,436	497,420
1999 Production	427,060	15,009	30,258	472,427
Area Sown	318,829	7,700	14,316	340,805
Average 1992-99 Production	222,915	5,485	10,028	238,429
Area Sown	340,331	11,032	23,091	374,453

Source: Ministry of Agriculture (2002), Agricultural Sector Policy and Strategy Framework: Background and Context Development and Management, Asmara: Ministry of Agriculture, the Government of State of Eritrea (November).

Table 3 provides the MoA's assessment of the country's crop production from 1992 to 1999. It shows low yields per land area in addition to area cultivated and estimated total production. A measure of the land harvested, as

opposed to sown, would be useful in estimating the riskiness of cropping, however, we have no data on this. The average area cultivated was 440,000 hectares over the period with highest being 497,420 hectares in 1998 and the lowest

284,600 hectares in 1992 (MoA, 2002; Rena, 2002).

As stated earlier, yields per hectare are quite low due to the absence of external inputs and modern technology. Poverty in rural areas springs from low productivity. Poverty is more a rural phenomenon in most of the developing world especially in Eritrea. According to the World Bank, the average person earns less than one USD a day. The rural poor make up more than 75 per cent of the poor in many sub-Saharan African countries and the same is applicable to Eritrea. It is presumed that agricultural development stimulates economic development in developing countries. Moreover, agricultural growth is a catalyst for broad based economic growth and development in most developing countries. Agricultural linkages to the non-farm economy generate considerable employment, income and growth in the rest of the economy. Development models of USA, Japan, China, Malaysia and Taiwan are examples. Very few countries have experienced rapid economic growth without agricultural growth. The general economic philosophy is, when agriculture develops; it brings more income to the farmers. With more income, farmers demand more of agricultural inputs as well as consumer goods. This stimulates agro-processing and industrialisation. With prosperous agriculture and more intensity of cropping and agro-processing industries, agriculture generates more employment and income in rural areas. As a result, rural economy develops. This economic growth due to prosperous agriculture is strongly linked to poverty reduction in rural areas of Eritrea (FAO, 2000). It is believed that increased agricultural production cannot happen on its own but it can happen by applying modern and scientific methods of production. In this, the farmers are central to increase agricultural production. To achieve this goal, thousands of smallholder farmers of Eritrea need to be educated to practise scientific agriculture. This can only be done through an efficient and well-organised Agricultural Extension System (AES). According to the government reports, more than 200,000 Eritrean farm-

ers have been trained under the AES for the last few years. However, this is not enough and therefore, the AES should reach the remaining 400,000 potential farmers.

Theoretical Background of Extension

The meaning of the word 'extension' is well known and accepted by people who work in extension organisations and services but is not well understood in the wider community. In common parlance, it has two Latin roots, *ex*, means 'out' and *tensio* means 'spreading'. Literally, agricultural extension is an act of spreading out useful and practical knowledge of farming to those who need it. Agricultural extension is a significant force in agricultural change, which has been created and recreated, adopted and developed over centuries.

Different Views: Farmers correctly view extension as a form of assistance to help improve their know-how, efficiency, productivity and profitability and contribution to the good of their families, community and society. At the same time, planners and policy makers in many developing countries view extension as a policy instrument to increase agricultural production, to achieve national food security, and at the same time, help alleviate rural poverty. Some economists view extension as a policy instrument that can contribute to human capital development and economic growth. Therefore, resources allocated to extension are viewed as an economic investment, which must produce competitive economic returns.

To the practitioners, agricultural extension enhances and accelerates the spread of useful knowhow and technologies to rural people. These activities are expected to lead to increased and sustained productivity, increased income and well-being of farm people and the promotion of national food security and economic growth. For educationists, extension is education for life. Extension is simply a word to indicate the whole complex of activities, which enter into a programme that is educational in its philosophy, its objectives and its methods. It uses the persuasion and convincing educational

methods while applying scientific knowledge to the problems of farmers.

Different people have defined agricultural extension service in different words. Yet all agree on fundamental principles i.e. its educational approach. It was defined by the US State of Department of Agriculture as "Agricultural Extension assists people engaged in farming and home making to utilise more fully their own resources, and those available to them, in solving current problems and in meeting changing economic and social condition. Through the educational and service approach, rural people are stimulated to make changes that result in more efficient production and marketing of farm products, conservation of natural resources, more comfortable homes, improved health and more satisfying family and community life" (United States Department of Agriculture, 2003).

The purpose of extension teaching in agriculture and home economics is to establish a branch of education for people not in college, that will take to them information, ideas and suggestions that will encourage and help them to make farming more profitable, farm homes more comfortable and rural communities more satisfying (FAO, 2000).

Extension Organisation in Eritrea: The country has six agricultural zones defined by climate, altitude, soils, and population density. They are: (1) The Central High Land Zone; (2) The Western Escarpment Zone; (3) The South Western Lowland Zone; (4) The Green Belt of the Eastern Escarpment of the Highland Zone; (5) The Coastal Plains Zone and, (6) The North-western Lowland zone. The Ministry of Agriculture (MoA) in Eritrea therefore, divided geographically by area along departmental lines runs the agricultural extension organisation. Indeed, there are three or more levels, 1) Director Generals and Directors at Headquarters 2) Heads of MoA at zoba levels supported by senior level subject-matter specialists 3) Heads of MoA at sub-zoba level supported by junior level subject-matter specialists 4) At Kebabis and village level there are contact farmers who are trained by subject-matter special-

ists. These trained contact farmers have to reach other farmers with technology. It is reported that there are about 500 personnel in the MoA in the country and everyone has an extension function. It is to be emphasised that the trained contact farmer is the link between the farmers and the government. The contact farmers are expected to influence other farmers in the village to adopt new technology advocated by the department (FAO, 2000). It is observed that there are no field extension workers at grassroots level apart from the subject-matter specialists located at sub-zoba level. Subject-matter specialists cannot play the role of basic extension workers. And these subject-matter specialists are believed to be masters in their areas of specialisation and they have to support the field extension functionaries with their specialised knowledge and experience. It is strongly believed that agricultural development in Eritrea must provide a better quality of life to the people living in rural areas and thus minimise the poverty levels. The government has declared in its new strategic plan recently drafted about this task. Despite resource constraints, the government has to explore the opportunities funding resources both domestically and internationally to boost agricultural development. This development takes place only through a strong extension system.

Discussion and Implications

Efficiency of Agricultural Extension System : Food and Agricultural Organisation (FAO) of UN after studying the food situation of Developing World revealed that agricultural production in 90 developing countries can be increased always through three methods. These are: 1] Expansion of arable land could provide, i.e. 26 per cent of needed additional production; 2] Increased irrigation facility could provide i.e. 14 per cent of needed additional production; and 3] Higher yields due to adoption of science and technology could provide, i.e. 60 per cent of needed additional production. It is understood that the third method is through the application of science and technology. This is obviously, the surest method while the other two have

limitations (FAO, 2000). There are some factors identified, that could influence the working of agricultural extension system. However, the following factors are believed to be greatly enhancing the working efficiency of the extension system in Eritrea.

Linkage between Extension and Research: An effective linkage between agricultural research and extension is quite important for the development of agriculture and in the absence of it, agricultural development suffers. There should be proper mechanisms for both extension workers and researchers to come together, think together and work together in the best interest of the farmers. This emphasises frequent joint meetings, discussions, seminars, workshops, conferences, and planning and review meetings, training programmes, etc, for extension workers, subject-matter specialists and research scientists. Joint field visits, diagnostic team visits, layout of farm trials on farmers fields are some of the instruments to achieve this linkage at operational level. Indeed, it is opined that Training and Visit system of extension of the World Bank had an inbuilt mechanism for strong extension-research liaison. Appropriate technology is an essential element of successful extension. However, development of effective, appropriate technology depends on a good knowledge of understanding of the existing production environments and related factors surrounding the farmers. This can only be achieved when farmers or their representative's actively participating in the design and conduct of research. Extension is considered a two-way channel of communication and an effective extension service should accelerate the flow of farmers' problems to the researchers and policy makers.

Besides, the agricultural extension workers in Eritrea can interact with researchers and can teach the farmers certain important farming practices and usage of more productive and efficient technologies. In this process extension worker is basically a teacher and uses a variety of adult education methods to change the attitudes, knowledge and skills of farmers. It is natural that sooner or later farmers will adopt the

new technology but the extension agency has to accelerate this process of accepting new innovations and reduce the time lag between the release of innovations and their final adoption.

Extension Worker as Agricultural Advisor: The quality and number of the technical and professional staff in the organisation largely reflect the worth of extension system to society. Given the mission, scope of the work and available resources, what type of qualifications to be prescribed and how many extension staff should be employed by extension system? What should be the proportion of subject-matter specialists (SMS) to field extension workers? What should be the proportion of field extension workers to the number of farmers, farm households or other target groups? How should extension staff be deployed, how often should they be transferred and what incentives should be provided in order to ensure that they work closely with all groups of farmers? These issues are very important for organisational efficiency. Extension agent is the part and parcel of the extension organisation. The working of this agent is reflected in his organisational efficiency i) He/she should have a thorough knowledge with local farming system as well as local farmers and their organisations. Besides, he/she should have empathy with the farmers' problems and must have a clear vision about what scientific findings can be applied to solve local problems. ii) He/she must also be capable of giving farmers practical field demonstrations of appropriate improved techniques. Further, the extension agent has to help farmers to locate farm supplies and equipments, advise them on sources of credit and marketing. He/she should be capable of taking follow-up action to help the farmers with these organisations. iii) In traditional villages, the extension agent should be an all rounder with good grounding in agricultural sciences along with communication skills. Farmers should respect his knowledge and practicability. In more advanced villages, more specialisation is required on the part of the extension worker. If he/she is not competent

enough to solve the problems of farmers, he/she loses credibility and brings bad name to his profession and organisation he or she represents.

Coordination Extension with other Services: It has been the experience of many developing countries that increasing agricultural production is a complex task. It is a function of many factors. Extension services have contributed very little in isolation, because, technical information without other facility like inputs, irrigation, electricity, credit, markets, prices etc., cannot assist the farmers. Techniques alone are not enough in developing countries; they have to be linked with delivery of farm inputs and other facilitators. While it is true that the role of extension is to educate farmers on new technology and the extension agent should not involve with organising credit, distributing supplies and marketing, they should be familiar with the activities of credit agencies and farm input suppliers and be able to coordinate their work with them. This accelerates the absorption of technology.

Farmers' Organisations: The farmers in many developed countries are better organised themselves in different ways to serve their common interests such as getting farm inputs, credit and marketing, besides getting the services of extension and research. On the contrary, in developing countries like Eritrea such organisations seldom exist, if at all they exist they are ineffective. Hence, the village extension worker must learn the principle of community organising and group management skills in order to help the community, especially the poor or weaker sections to organise itself for development. Organising cooperative institutions like milk producers cooperatives, poultry farmers' associations, horticulture producers cooperatives, beekeepers cooperatives etc., would help the farmers in a big way. It is easy for the extension workers to work through these organisations. This is a sort of empowering local people and thus reducing the rural poverty. Empowering is an act of helping communities to build, develop and increase their power through cooperation and collective actions for common

good. Establishment of effective farmers' organisations is at least as important as the introduction of production technology in developing countries. Extension organisations through their workers can play an important role in teaching farmers how to organise themselves effectively. Extension workers need training in this community organisation role. This will enhance the efficiency of extension organisation. Substantial scope also exists for government and non-governmental organisations come together and work together for the common goal in developing the rural communities in Eritrea. It is opined that the Government extension organisations can surely benefit from NGO's group organising skills. Reciprocally, Governmental organisations can help NGO's in technological skills such as dairy, poultry, horticulture, and watershed development etc., through training sessions.

Extension Funding: It is necessary to have adequate funding for extension organisation to work efficiently. In these days of cutting government budgets, many feel that public extension is both expensive and drain on the government's limited resources. At the same time, studies conducted in both developed and developing countries indicate that returns to extension expenditure are high. On the other hand, the demand for extension is growing (Eritrea Profile, 2006). No doubt, there is a need to improve efficiency of extension organisation and reduce the cost of public extension. However, policy makers should look for ways to increase extension funding to adequate levels of support.

In most of the low-income and food deficit countries in Africa, the absolute levels of extension funding are very low. It is inadequate to provide adequate coverage for all groups of farmers, especially those who are resource poor and at the subsistence level. In these countries, the needs of women and young farmers are largely neglected. When extension organisations and programmes are adequately funded, one can expect greater efficiency by the way of better-paid and strongly motivated workers, better teaching materials, transport, training programmes etc., which can reflect in better

performance. In the event of inadequate funding, the performance of the extension system suffers. The issue of funding extension continues to be the most difficult policy issue faced by extension. This is further complicated by the increased demand for more extension services on the part of increasing numbers of farm households who have fewer land and water resources.

Agricultural Development Policies : As stated earlier, agriculture is the main source of income and employment in rural areas of Eritrea. Agriculture growth is also the main way to reduce poverty. It is the responsibility of the policy to facilitate reduction of poverty and achieve equal distribution of wealth. For agriculture growth the farmer needs three basic things such as:

i) Pricing Policy: Prices of inputs and outputs need to be determined to offset inflation. Low prices of inputs and reasonable prices for outputs work as incentives for farmers to produce more;

ii) Resource Policy: This includes land tenure policy and policies for management of natural resources such as land, water, forestry and fisheries.

iii) Access Policy: This includes access to agricultural inputs, output markets and technology. Agricultural credit policy is an important part of access policy, since in many cases credit is a prerequisite for obtaining inputs and marketing products.

In the broader sense resource policy includes the basic resource of human capital, for which rural education and training programmes are vital. This is the concern of Agricultural Extension Policy. Agricultural extension policy is a part of national development policy in general and of agricultural and rural development policy in particular. Hence, agricultural extension is one of the policy instruments, which governments can use to stimulate agricultural development. Extension is a weak instrument when it stands alone, but becomes powerful when combined with price incentives, input supply, irrigation, credit, seeds multiplication and so forth. The government of Eritrea has very recently formulated

its comprehensive Agricultural Development Policy and the Agricultural Extension Policy is also on the anvil (FAO, 2000). It is hoped that both these policies would support agriculture development, which will work as an instrument to reduce rural poverty.

Further, the ratio between extension worker and farmer is very wide 1: 1200 in the country. Practically, one extension agent cannot advise, guide and educate thousands of farmers who have diversified needs and carrying on agriculture under varied conditions. In risk-prone rainfed agriculture, mere delivering messages to farmers will not result in adoption. They need more of participatory agricultural extension, which demands more time from the extension worker. Hence, there is a need to employ more agricultural extension workers to work at Kebabis (village) level (FAO, 2000). These basic field extension workers have to be graduates/diploma holders either in agricultural science or in animal science and well trained in social and communication skills. In traditional societies, the contact farmers are not more innovative than their followers are and hence they cannot provide leadership to others in the matter of adoption of new technologies.

In order to solve this problem, there should be a well trained and credible extension worker at the Kebabis level to advise, guide and educate farmers. Easy accessibility of extension worker to farmers will be rather a great gift to the farmers to solve their immediate farming problems. The field extension worker should invariably stay in the Kebabis. The extension worker should therefore, serve as a friend, philosopher and guide to farmers to increase agricultural production and to enhance the quality of life of the rural communities (Ministry of Agriculture, 2002). Besides, the enterprise combinations by which Eritrean farmers seek to make the best use of their land, labour, and capital. To change the above things for achieving agricultural development, farmers need non-formal education, i.e. "extension education". The main objective of extension education is to enhance learning among those who till the soil and tend

the livestock. It is the process of learning in which the needed technology will be applied to increase the production. It is often the non-formal agricultural education interface with rural people, government and non-governmental organisations (UN, 1998).

To raise productivity, domestic savings and foreign finance must be mobilised to generate new investment in physical capital goods and also to build up the stock of human capital through investment in education and training besides agriculture extension to mitigate the poverty. Institutional changes are also necessary to maximise the potential of this new physical and human investment.

In view of the high poverty ratio, it is suggested that self-employment and wage employment programmes in the agriculture sector through the extension activities may be initiated in the country. Besides, the wage employment programme can be initiated through creation of infrastructure.

In the light of the escalating nature of poverty in the country, there is an urgent need for a poverty alleviation initiative to reduce the miseries of the vast population of the poor. Such an initiative should be well articulated and short-term targeted. Thus, it is suggested that the government poverty reduction strategy should be restructured if not re-designed and should be centered on the 'basic needs' approach. This approach emphasises the importance of separating generalised increases in income from the more significant attainment of the requirement for a permanent reduction of poverty through the provision of health services, education, housing, sanitation, water supply and adequate nutrition.

Efforts to reduce poverty may therefore, not likely to succeed in the long run unless there is greater investment in the human capital of the poor. Improvement in agriculture extension, and education, health, nutrition directly addresses the worst consequences of being poor. There is ample evidence that investing in human capital, especially in education, shelter,

and social services increases the productivity of the poor and also attacks some of the most important causes of poverty (Todaro, 1989). To actually break the vicious circle in which the poor finds himself, the government must make reaching-the-poor a priority. This can be done through the establishment of special schools through which farmers can learn better about the importance of agriculture extension which enhance the productivity of the agriculture and ultimately minimise the poverty levels in the country.

Conclusion

The study examined the agriculture extension and its impact in reducing the poverty levels in Eritrea. It is noted that most of the poverty alleviation policies in Eritrea are directed towards agriculture in rural areas. However, it is understood that the vast human resources in Eritrea, both the men and women farmers are behind the plow. To increase the agricultural production many conditions have to be created and/or modified by different persons and groups of people in Eritrea. To feed the growing population, Eritrea needs rapid agricultural development. Increased agricultural production comes from new techniques or methods put into practice on farms by the Eritrean farmers. The technology of farming includes the methods by which farmers sow, cultivate and harvests crops and care for the livestock. It comprises the soil, the seeds, the fertilisers, the pesticides, the medicines and the feeds they use, the tools and equipments, implements they use and the sources of power. The farmers through agriculture extension programme better understand all these ingredients. In line with this, the government has to adopt necessary steps to develop the agriculture extension systems to change the attitudes of the Eritrean farmers toward scientific agriculture, impart knowledge of new practices; provide necessary skills and entrepreneurial behaviour to the farmers. This in turn will increase agricultural production and productivity which would ultimately minimise the high levels of poverty in the country.

Besides, Eritrea should implement its comprehensive agricultural extension policy

effectively with the coordination of research, education, input supply, and credit and marketing systems. It is also hoped that this policy will give proper direction to the extension system and prevent trial and error method of working and thereby deriving more efficiency. In line with

the policy mission and goals of agricultural extension, the responsible agencies and personnel, the clientele have to serve diligently to improve the productivity of agriculture in the country that ultimately minimise the poverty levels in Eritrea.

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