ERITREA:

COUNTRY REPORT TO THE FAO INTERNATIONAL TECHNICAL CONFERENCE ON PLANT GENETIC RESOURCES

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CHAPTER 1
Introduction to Eritrea and its Agricultural Sector, Location Size and Population

Eritrea is a country of northeastern Africa bordered on the east by the Red Sea, the south by Djibouti and Ethiopia, and the north and west by Sudan.

It has a land area of 125,000 square kilometres and a population estimated at 2.2-3.5 million. The country has an estimated annual population growth of 3.3%.

1.1 AGRO-CLIMATIC CONDITIONS

Eritrea has, in spite of its limited area, a wide range of agro-climatic conditions related with altitude which goes from below sea level up to 2,400 m. and, few locations, above. Based on agro-climatic and soils parameters, the region can be grouped in six zones, as shown in the attached map and summarized below (FAO REPORT, 1994):

The Central Highland Zone (CHZ)

The zone is above 1,500 m, which comprizes the heavily eroded plateau and most part with warm to cool semiarid climate.

The annual rainfall, occurring in summer (June-September), ranges from less than 400 mm. to more than 700 mm. and the potential evapotranspiration is 1,300-1,800 mm.

The production systems are:

a) rainfed cereal/pulses system depending on animal power ploughing and threshing (oxen). Major crops grown are wheat, barley, *sorghum*, finger millet, maize and taff, peas, beans, chick pea and linseed. Small ruminants are reared by most families for meat and milk and, as a source of cash; communal grazing areas and seasonal migration of herds to the low lands-Donkeys and mules important for transport;

b) irrigated horticulture based system: 1/4 of the total land is irrigated and the rest is rainfed cereal/pulses production as above Main crops grown

under irrigation are potato, tomato, onions, pepper and leaf vegetables. Surplus incomes invested in sheep, goats and cattle;

c) semi commercial periurban livestock (dairy poultry) system: Small scale periurban semicommercial specialized production of mainly milk and poultry to supply increasing urban demand (Asmara and main provincial capitals).

The CHZ includes three subzones having many common features and in particular the major crops; but distinguishable in altitude, annual rainfall, relief, population density and degree of environmental degradation.

The three subzones are

1) Highland (H): above 2,000 m. and most densely populated where any available and suitable land is cultivated. The average annual rainfall is 500 to 600 mm.

2) Southern Midland (SM): from 1,500 to 2,000 m. with generally lower population density and greater rainfall, especially in the extreme south.

3) Northern Midland (NM): the altitude of this sub zone is also 1,500 to 2,000 m., but arid with less than 400 mm. of precipitation and very low population density.

The Western Escarpment Zone (WEZ)

The WEZ, which ranges between 600-1,500 m, has a warm to hot semiarid climate and its soils are determined by the geology of the central highlands. However, in terms of climate, cropping and population density has much in common with the south western lowlands with which it joins. The average annual precipitation, occurring in summer like in the CHZ, is between 400-500 mm.

The production system is agro-pastoralist and the main rainfed crops grown are *sorghum*, finger millet, taff, maize, sesame, cowpea and chick pea. Larger herds compared to the CHZ including cattle, sheep and goats. The area crossed by the river Anseba is particularly suitable for production under irrigation of citrus, grapes, a wide range of tropical fruits and all kind of vegetables.

The South Western Lowland Zone (SWLZ)

The elevation of this zone is more or less 600-950 m. with a hot semiarid climate and summer rainfall in excess of 400 mm, increasing especially towards the south west. Topography flat with soils quite different, from those of the highland and transition zone, which includes large areas of verti sols.The population density is very low.

The production systems are:

a) nomadic pastoralist system: rearing of mixed herds (camels, cattle, sheep and goats) with seasonal long transumance of the entire herd and family in search of pastures. Small scale & cultivation of *sorghum*, pearl millet and sesame.

b) Semisedentary agropastoralist system: mainly is livestock rearing practised by ethnic group such as Tigre and BenAmer with short term transumance of homestead to nearbine riverine areas and long term transumance of cattle. During the rainy season cultivation of crops such as *sorghum*, millet and sesame around the villages is an important activity.

c) Crop livestock mixed system: the main activity of population groups such as Kunamas and Naras as well as small scale highland settlers is agriculture with extensive cultivating of *sorghum*, pearl millet and sesame in a long fallow rotational system. Sedentary rearing of mixed herds (cattle, sheep and goats) with occasional seasonal transumance in dry areas is also practised.

d) Small scale irrigated hortic ultural system : along the Gash river, in addition to the mixed rainfed crop production and livestock raising described in the former system, farmers have access to irrigation (pump) and cultivate fruits (bananas, citrus and other tropical fruits) and all kind of vegetables.

e) Commercial farming system: recently developed after independence favoured by distribution of land concessions and availability of capitals, mechanized large scale rainfed cultivation of *sorghum* and sesame and/or medium scale irrigated plantations of bananas and citrus for internal market and export.

The North Western Lowland Zone (NWLZ)

Zone from 400 to 1,500 m, a hot arid climate with at most 300 mm. of summer precipitation and in the extreme north west below 200 mm; potential of evapotranspiration 1,500-2,000 mm.

The production systems are:

a) nomadic pastorals system

b) irrigated commercial fruit and vegetables system.
The first is practised by Tigre, Binamer and Hidaraeb tribes rearing mixed herds (mostly camels, cattle and also small ruminants) with long migration during the dry season. Some cultivation of *sorghum*, millet and vegetables along the river beds are used.

The second production system is practised in the northern part of the zone along the river Barka and the production is mainly of citrus and bananas, but also vegetables.

The unique Green Belt Zone (GBZ)

The GBZ, located on the eastern escarpment of the CHZ, has elevation more or less 750 to 1,000 m. with microclimate range from subhumid temperate to humid tropical. It is the highest rainfall area with average annual precipitation from 700 to 1,000 mm, occurring between November and March. The slopes are often steep and the permanent population density is low, but used also by neighbouring highland people for seasonal transumance.

The production system is mixed cereal/pulse based including cultivation of permanent trees (coffee in the higher areas), annual crops (maize, wheat, barley, *sorghum*) as well as different pulses and vegetables, potato in particular. In the lower areas citrus, bananas, vegetables, maize and *sorghum* are cultivated.

The Coastal Plain Zone (CPZ)

The CPZ ranges from below sea level to 600 m. with desert climate where rainfall, occurring during winter like in the GBZ, is less than 200 mm. The potential evapotranspiration is in excess of 2,000 mm.

The zone is of poor pasture resources and the production systems are:

a) **nomadic pastorals :** used in the northern part of the coastal plains (Sahel) by Rashaidas and in the southern part (Dankalia) by Afar ethnic groups. Mixed herds are kept (camels, cattle, small ruminants) and long transumance in search of feed and water are practised Traditionally salts and other commodities are also traded.

b) **agropastoralist spate irrigation based :** main activity is rearing of mixed herds (cattle, camels and small ruminants) and seasonal migrations towards the adjacent highland during the hot dry season. In areas where rivers originating from the

highlands flow through the eastern escarpments, the farmers divert the water into bulded fields and using animal traction cultivate *sorghum*, maize, cotton, groundnut, as well as watermelon on residual moisture.

1.2 LAND TENURE AND FARMING SYSTEM

In general, the land belongs to the community and is divided to individual families by elders for several years (mostly 5 to 7 years) then rotated.

The farming system is usually traditional and the land is cultivated by a pointed steel or even wooden plough drawn by two oxen (in some lowland areas is used one camel).

However, some commercial farmers, who grant land from the state domain by the Ministry of Agriculture as concession for several years, use tractors and grow under irrigation fruits, vegetables and other industrial plants for internal market and/or export.

1.3 AGRICULTURAL SECTOR

Eritrea's economy suffered tremendously as a result of a long drawn out war and is currently among the poorest countries in the world. Of the country's land area of 12.2 million hectares only about 417,000 (3,4%) are under rainfed cultivation or fallow, while mere 22,000 hectares (0.18%) are irrigated. Nevertheless, agriculture is the most important sector of the Eritrean economy, accounting for about 50% of the gross domestic product (GDP) and the bulk of export earning. In Eritrea the greatest part of the agricultural sector is run by subsistence farmers, who cultivate more or less from one to three hectares depending on the availability of land according the different locations. Main source of their production are a wide range of rainfed crops grown in the above mentioned different agroecological zones of the country. Among the most important of these are cereals (barley, wheat, taff *sorghum*, maize, millets), pulses (chick pea, faba bean, field pea, lentil, grass pea), oil seed s (linseed, sesame, Niger, groundnut), fibre crops (cotton), spices, medicinal plants and others. However,some farmers, where water is available, grow also vegetables under irrigation during the winter dry season.

The seed supply to the towns and big villages markets derive predominately from peasant farmers, directly or through dealers. Fruits and vegetables supplier are commercial farmers and some peasants growing under irrigation throughout the whole year. It is remarkable that the previous important role of medium and big commercial farmers (nationals and foreigners) is heavily

weakened because the farms completely destroyed by Ethiopian soldiers during the long period of conflict. Peasant farming has also suffered tremendously.

1.4 NEW TRENDS IN PLANT PRODUCTION

In the past years the disaster of artificial and natural calamities (long war, drought, pest and disease attacks) have caused loss of crops production a well as disappearance of some high yielding introduced varieties and old local cultivators. At the moment the Government of New Eritrea is trying to increase yield production of crops in order to solve food selfsufficiency. The new trends in plant production are:

a) assist peasant farmers to improve rainfed crop production and supplement it through development of irrigation,

b) encourage individuals to expand commercial farms for the production of food and industrial crops for local market and export.

CHAPTER 2
Indigenous Plant Genetic Resources

2.1 WILD SPECIES AND WILD RELATIVES OF CROP PLANTS

Eritrea is a primary or secondary centre of diversification of several crops, as recognized by the imminent Russian scientist N.Vavilov as a result of his studies conducted on a huge number of materials collected from Eritrea and Ethiopia during his exploration missions in 1926-27. Among the most important of these are cereals (*sorghum*, barley, durum wheat, taff, millets), legumes (chick pea, grass pea, cow pea), oil crops (sesame, safflower, Niger, cotton) and others (spices, medicinal plants, roots, and horticultural crops). In this country of limited area but possessing a wide range of agroclimatic conditions related with altitude varying from below sea level up to 2,400 m. or more, the crop genetic diversity arises from the early farming in the Near East, most probably about eight thousand years ago and are transmitted through generation by peasant farmers who use the traditional system of cultivation.

According recent studies conducted at the University of Asmara (Sue Edward), the following species are reported as having still available wild relatives; in general found in grass land, woodland and wet places in the areas where the cultivated species are distributed:

Cereals: *Avena abyssinica, Sorghum bicolor, Pennisetum typhoides, Eragrostis teff;*

Pulses: *Cicer arietinum, Lathyrus satirus ,Vigna ungiculata, Vicia sativa;*

Oil crops: *Gossipium arboreum, Sesame indicvm, Carthamus tinctorius, Guizotia abyssinica;*

Roots and tubers: *Coccinia abyssinica, Dacus carota, Dioscorea bulbifera Horticultural crops: Abelomoschus esculentus, Citrullus lanatus, Cucumis melo, Allium sativum, Momordica charantia;*

Spices: *Opium graveolens, Lepidium sativum.*

To avoid the imminent danger of genetic erosion (due to changed agricultural systems, artificial and natural calamities) of important cultivated crop species

and wild relatives, foreign assistance is an urgent need to properly organize our gene bank, as explained further.

2.2 LANDRACE (FARMERS VARIETIES) OLD CULTIVARS

In Eritrea traditional cultivars of several different crop species are widely used by peasant farmers. Improved lines (e.g. durm wheat obtained from crosses between exotic Mindum x local A10 released to farmers during the Eritrean Federal administration in 1958) and more recently introduced high yielding varieties of major crops are also utilized to a certain extent.

Old landrace cultivars used by farmers belong to various major crop species i.e. cereals, legumes, oil crops etc. These crops, though low yielding have wider and better adaptation and tolerance to adverse conditions than the introduced ones.

The local people value indigenous plant genetic diversity following traditional knowledge transmitted from generation to generation. Through this un documented experience farmers select and or exchange and conserve landrace materials.

The Government land use policy, in principle, gives due consideration to the conservation and development of genetic resources for a sustainable use.

CHAPTER 3
Conservation Activities

Surveys conducted during recent years by the UN Food and Agricultural Organization (FAO) indicate that the rate of crop genetic erosion in the world is so rapid and alarming for future food security.

In Eritrea, though to the moment surveys are not carried out, the case is worsened as a consequence of the past years artificial and natural calamities (long war, repeated drought, pests and disease outbreak) which have caused ecosystem destruction loss of forest trees, decrease of the frequency of local old cultivars and exotic adapted varieties or disappearance of some of them.

3.1 *IN SITU* COLLECTION

In Eritrea, at the moment, there is an extensive programme of *in situ* conservation in forestry genetic resources (see annex report), but this has not been initiated *in situ* conservation for crop species and wild relatives.

3.2 *EX SITU* COLLECTION

The Department of Agricultural Research of the MOA has established a small national medium term germplasma storage (gene bank) in mid 1992.

The refrigerators into which the collections samples are accessed along with the laboratory equipments, were supplied and installed with the assistance of ACORD (Agency for cooperation in Development) a UK based NGO. Running costs is financed by the MOA, but to secure the conservation and development of germplasm collections foreign financial support is very essential.

The total holding of the materials collected is about 1,000 (one thousand) accession, of which the majority are local cultivars while the rest are imported materials (Ethiopia, Egypt, Kenya).

The samples were collected from different areas of Eritrea by extension agents following random sampling technique and using the IPGRI form sheets. However, there is a need for a comprehensive countrywide exploration and collection of germplasm.

The germplasm collections maintained in the gene bank belong to different crop species and are as listed below:

Commodity	Number of Accessions
Cereals:	
barely	198
wheat	138
sorghum	335
taff	83
maize	56
finger millet	51
pearl millet	48
Sub total	***909***
Legumes:	
faba bean	25
field pea	20
chick pea	12
cow pea11	11
grass pea	2
lentil	2
Sub total	***72***
Oil seeds:	
sesame	52
lin seed	22
groundnut	21
cotton	7
mustered	2
niger seed	1
sunflower	1
Sub total	***106***
TOTAL	***1,087***

The materials collected are not still used in crop improvement programmes since the characterization and preliminary evaluation activity is starting in 1995 planting season. *Ex situ* collections in form of arboreta, botanical gardens and field gene banks have not been yet established; however, they are taken into consideration in our future plan.

3.3 STORAGE FACILITIES

The materials collected are maintained into six refrigerators in sealed plastic bags contained in plastic boxes. Two of the refrigerators are regulated below zero 5°C and four above zero temperature (+4°C). For each accession the amount of seed stored is put in three different plastic bags each containing 100 (one hundred) grams. Because of fear of probable damage of the samples preserves due to electricity power failure or spoilage of some internal parts of the refrigerators, duplicate samples are maintained at room temperature. The cold storage capacity is at the moment full and for extra storage facility it is vital that our gene bank be enlarged through some international support. Important seed processing and handling equipment and also ancillary facilities are not yet available. These include seed counter, seed drying facility, growth chamber, seed extraction equipment, sealing machine and packaging containers.

3.4 DOCUMENTATION

The documentation system is manual and the gene bank requires appropriate computer for documentation of germaplasm collections, characterization/evaluation data and the gene bank managemente

There is a need of documenting materials for reference and information of the entire activity of the gene bank. At the moment there is lack also of manpower trained in germplasm exploration/collection conservation,evaluation and documentation activities.

3.5 EVALUATION AND CHARACTERIZATION

A systematic characterization/preliminary evaluation activity of the various crop species accession will partly start during the coming rainy season of 1995. The data will be carefully recorded in appropriate from sheets, consulting and modifying as required by the IPGRI standard descriptor lists.

In future the routine activity of seed regeneration and characterization/preliminary evaluation as well as further (in depth) evaluation for a greater number of germplasm collections will be complex and expensive task, and hence an international funding help will be needed. Our Research Centre will take the leading role on crop based research.

The international support will also open opportunities to involve peasant community in the conservation and development of the existing genetic diversity through projects of “on farm conservation”.

CHAPTER 4
In Country Uses of Plant Genetic Resources

As the gene bank is at its initial stage of development the main activity now is to explore and collect as many accessions as possible through out ,the country so that the loss of the existing diversity of land race genetic resources is deterred. Consequently, the materials conserved will be characterized, evaluated and well documented, making them available to the users. Efforts are being made to encourage the utilization of landrace materials.

4.1 CROP IMPROVEMENT AND SEED DISTRIBUTION

At the moment research for crop improvement programmes, concerned mainly with adaptation trials of introduced varieties in different locations of local materials possessing better morphologic characteristics. Either from the exotic or landrace strains those with desirable traits for yield capacity and tolerant to drought or diseases will be multiplied and released to farmers according to the various microclimates of the Eritrean region. Through this approach the objective is to develop gradually the national erop improvement of the country. In the future, it is planned to establish a seed industry in the agricultural sector.

The research activity is conducted primarily by Government funded programmes and for better results a collaboration of International Research Organization would be of great support and encouragement.The benefits derived from local genetic resources collection are of particular importance and consideration, since contrary to the adapted exotic variety, they are capable to maintain their good agronomic qualities for long period. For example, three bread wheat varieties known as Kenya group (K1, K5, and K6) and one durum variety named Mindum XA10 (cross between the exotic Mindum and the local ASMARA selection line A10) were released to farmers during the Eritrean Federal administration in 1953/4 and 1958 respectively for rusts resistance and yield capacity. The exotic bread wheat varieties were found to be susceptible to rusts and decreasing in yields after 5-6 years only and were replaced by other two varieties named “102” and “105”. On the contrary, the exotic durum wheat Minim crossed with the local sel ection is still in the hand of peasant farmers and continue to maintain its characteristics of yielding potential and rust resistance at a medium level.

Farmers, who had contributed to maintain landrace materials from generation to generation, teach us that local cultivars possess characteristics which enable them to give stabilized production in their native land more than any other introduced material. especially in adverse growing conditions. The most important common practice of Eritrean farmers to identify or value agrotypes better yielding, resistant to drought and pests, etc. is to cultivate a sustainable population instead of homogeneous seeds of a given crop species. When they are advised to plant a new introduced variety they prefer to mix it with the local ones or plant in adjacent separate fields for comparison. Although the exotic materials could show outstanding results the farmers are always suspicious and they retain seed stock of their own cultivars since they know that foreign varieties can not have a stable adaptation like the local ones.

Therefore, although we are of the opinion that the introduction of exotic and outstanding varieties is useful for immediate need, it is more profitable in the long run to enhanced develop indigenous cultivars for sustainable use. However, to realize such goals foreign assistance by concerned International Research Organizations is needed in order to organize a fairly good functioning gene bank; and capacities to conserve and utilize germplasm resources should be strengthened.

CHAPTER 5
National Goals, Policies, Programmes and Legislation

The national goals of preserving germplasm collections is to improve the livelihood of the population, by making available a rich reservoir of gene pool to breeding programmes for utilization. This will be pushed through systematic characterization/preliminary evaluation and further (in depth) evaluation studies of the materials conserved in the gene bank, as well as documenting properly all relevant data useful to the users. The genetic resources activities are carried out as a component of the Research Department of MOA, as has been mentioned on chapter 4. The gene bank should be organized and staffed properly. Among the most urgent training needs are aspect related to conservation, seed technology, genetic diversity, etc.

To strengthen and make effective the initial work of agricultural research, the Ministry of Agriculture has mandated the Research Department to prepare a draft on National Policy for Plant Genetic Research Conservation and Development to be approved by the Central Government. The objective of this policy is to guide legally the development of genetic resources for a sustainable use through conservation, evaluation, research for enhancement and control of in and out of germplasm by establishment of a quarantine system. In general, the laws and regulations of this policy recognize the sovereign rights of the State of Eritrea to develop and wisely use the genetic resources found within its international boundaries; however, it respects international agreements for the conservation and utilization of germplasm for mutual benefits.

Therefore, at the moment the country has not developed an official policy document on exchange of plant genetic resources, marketing of improved varieties as certified seeds, international commitment in the areas of trade and commerce, Intellectual Property Rights (IPR), etc. However, the agricultural research policy of Eritrea is to develop, test and disseminate agricultural technology to all types of producers that enhances national and farm level food security, maintains the natural resource base, provides a surplus for industry, and export, and generates employment and income in an equitable fashion. Research will carry out applied, adaptive and on farm activities that results in production and productivity increases for traditional and commercial farmers through the introduction of tested technology.

CHAPTER 6
International Collaboration

Eritrea has emerged in 1991 from a long drawn out war and it had not the opportunity to participate in several international forums on genetic resources conservation and development for a sustainable use (e.g. Convention on Biological Diversity signed in June 1992 in Brazil). The Research Department of MOA has established a small storage facility for germplasm collections in mid 1992 by the cooperation of a British NGO named ACCORD. Except for this cooperation, the Department has not benefited any assistance from the IARI and NGOS. However Eritrea became a member of FAO commission 1995. It also joined regional and international initiatives as IGAD and ASARECA. A cooperation agreement has been signed with ICARDA and ICRISAT for support in their mandate crops. The country has also joined the African Potato Association with assistance from CIP. Finally, the Research Department has also signed with the Plant Genetic Resources Centre/Ethiopia (PGRC/E) a cooperation on training and activities on genetic resources conservation and development.

Certainly foreign help for agricultural research development to a country like Eritrea, which suffered tremendously from a long war aggravated by repeated natural calamities, is of vital importance. Therefore, in this country report we take the opportunity to request through the IPGRI Regional programme for SubSaharan Africa that CGIAR takes into consideration the possibility of supporting our research programme in exploration/collection, evaluation/utilization of genetic resources for development and sustainable use.

CHAPTER 7
National Needs and Opportunities

The Eritrean people and its economy have terribly suffered from the effects of a prolonged war often combined with the occurrence of natural calamities (drought, outbreak of hazard pests, etc.) and is currently among the poorest countries in the world. Since the destruction of habitat and drought are one of the major factors causing genetic erosion most probably several cultivars of different crop species are seriously threatened to loss and some could have possibly irreversibly be disappeared.

In such a situation, it is extremely urgent to conduct an existing genetic diversity of landrace materials and make available a reservoir of gene pool useful in the national and international breeding programmes. These collection accessions must be characterized and well documented with relative passport and evaluation data to facilitate their utilization.

Eritrea, therefore, requires financial, technical and logistical support in the following areas.

1. Development of a natural centre for Plant Genetic Resources with the following facilities:
   - short and medium term storage facility
   - seed handing and processing equipment
   - laboratories and ausilary facility
   - computer hardware and software package
   - information and documentation centre for Plant Genetic Resources and related activities.
2. Inventory of *in situ* conservation site and collection for natural habitat, forestry species. and agricultural crop found in the various different agroecological zones which have different type of plant resources.
3. To carry out a systematic country wide germplasm exploration and collection of cultivated, agricultural crops, their wild relatives and other economically important wild plants forestry specie.

4. Development of integrated conservation strategies for genetic resources involving:
   - *in situ* conservation of natural habitat and on farm
   - *ex situ* conservation through medium and short term seed storage and *in vitro*
   - establishment of field gene bank of vegetatively propagated crop and recalcitrant species, important forestry species, medicinal plants, spices and herbs
   - establishment of arboreta and botanical gardens for ornamental plants, threatened species and other economically important species.
5. Documentation of Eritrean plant resources including taxonomic study, collection of herbarium specimen, species list in natural habitat, endemic species, areas of high inter and intraspecifics diversity of agricultural crops and wild relatives:
   - documentation of indigenous knowledge on use of plants, traditional plant breeding techniques and traditional environmental conservation strategies e.g.desa system
   - documentation of national plant genetic resources activity, project institutions and people involved in genetic resources work.
6. Development of a national herbarium, for documentation and repository of Eritrean plant resources base.
7. Regeneration, Multiplication, Characterization and Preliminary Evaluation of germplasm already held in the gene bank and that which will be collected in the future missions.
8. Evaluation and Utilization of germplasm in crop improvement programmes. This is very important in view of the information provided in chapter 3 of landraces in a sustainable agricultural production system.
9. Repatriation and duplication of germplasm: germplasm originally collected from, Eritrea by other countries and Organizations need to be repatriated, evaluated and used in crop improvement. For safety precautions o f a duplicate set of all germplasm, would be kept in another gene bank out side the country.
10. Development of manpower in plant genetic resources is crucial. Training at all levels (PHD, MSC, BSC and diploma) is required. The skills are required in all technical area of plant genetic resources, as mentioned previously on chapter 5.

11. Development of a legal frame work and policy, guidelines governing the conservation and utilization of plant genetic resources, particularly:

- access to germplasm
- exchange of genetic resources
- biotechnology and biosafety issues
- quarantine regulation
- establishment of a national centre for plant genetic resources
- intellectual property rights, including, farmers right
- gazetting of forestry reserves.

12. Development of a national coordination committee and programme on plant genetic resources, regional and international institutional linkages.

7.1 URGENT NEEDS

Development of a national plant genetic resources

Eritrea is one of the centre of diversity originally denoted as the Abyssinian centre of diversity. The country therefore has very unique genetic resources with a lot of intra and inter specific diversity. It is a centre of diversity for such important crops a barley, durum wheat, taff, *sorghum*, sesame, safflower, chick pea etc. This diversity has not been systematically documented and conserved over the years due to the state of insecurity. This important germplasm is currently under threat due to over exploitation, over grazing, prolonged war drought, disease out break and introduction of improved varieties It is therefore important to establish a national centre for, plant genetic resources with gene bank facilities and equipment '92s to undertake responsibility for germplasm exploration, collection, conservation, documentation, evaluation and utilization Among the urgent issues the Centre will address is the systematic inventory, documentation and collection of landraces, wild relatives and economica lly important wild species. The germplasm will be conserved on both medium and short term bases. The documentation process will require procurement of appropriate computer hardware and software while the conservation, needs will include procurement of chest deep freezers and seed handling equipment.

CHAPTER 8
Proposals for a Global Plan of Action

On chapter 6 it has been specified that Eritrea, for various research had not opportunity to participate in past several international conferences on genetic resources conservation and development issues. For these reason we are constrained by lack of information on international conventions and agreements related to germplasm collection and conservation Nevertheless, we have attempted to present some proposals for a Global plan of Action for the conservation and sustainable utilization of PGR conference to be held in 1996 in Rome.

1. Assist and support community level farmers in enhancing their capacity to conserve plant genetic resources since their role in the conservation of landraces for agricultural production is of primary importance.
2. The international community and the Global Plant of Action should develop a reward system in recognition of farmer effort in the conservation of plant genetic resources.
3. The Global Plan of Action should outline precise procedures for international seed exchanges agreements, respecting the sovereign rights of each country on its PGR conservation and utilization in accordance with the internal rules and regulations.
4. The GPA should develop mechanism for bridging up gaps that might exist between donors and genetic resources owners, arising from unilateral tendency of interests and not well defined equability on benefits.
5. The GPA should ensure that bilateral development assistance not be used as conditionalities for access to germplasm or vice versa.

Appendix 1

General Remark on Questionnaire of the Following Chapters:

Chapter 3. Conservation Activities

Chapter 4. In Country Uses of Plant Genetic Resources

Chapter 5. National Goals, Policies, Programs and Legislation

Chapter 6. International Collaboration

Eritrea emerged in 1991 from a struggle protracted for 30 years and the New Administration took the heavy responsibility of reconstructing the economy of the country destroyed by long war and the occurrence of repeated natural disasters since about three years back only. Therefore, the followed descriptions concerning the above mentioned 4 chapters reflect the actual situation and the need of the country instead of trying to answer questions valid in other organized countries, as suggested also by ICPPGR in the draft guidelines for country reports.