ALBANIA:

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

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Prepared by:

Ministry of Agriculture and Food

Collaborators:
Lufter Xhuveli
Hysen Lacaj
Artes Sokoli
Mevlud Hallidri
Petraq Sotiri
Thimaq Lako
Spiro Karaduni

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Note by FAO

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Table of contents

CHAPTER 1
Introduction

Albania and its agriculture sector

Albania is laid on South-Western part of Balkan Peninsula, along Eastern coast of Adriatic and Jonian seas between 42°39' and 39°38' geographic longitude and 21°4' and 19°16' geographic latitude. It has a surface of 28748 km^2, by North-South longitude 340 km and West-East latitude 148 km. Albania is mainly a mountainous and hilly country with the average altitude of 704 m above the sea level. There are many rivers and torrents which cross her territory pouring down to Adriatic and Jonian seas and the valleys are oriented mainly from North to West (see map).

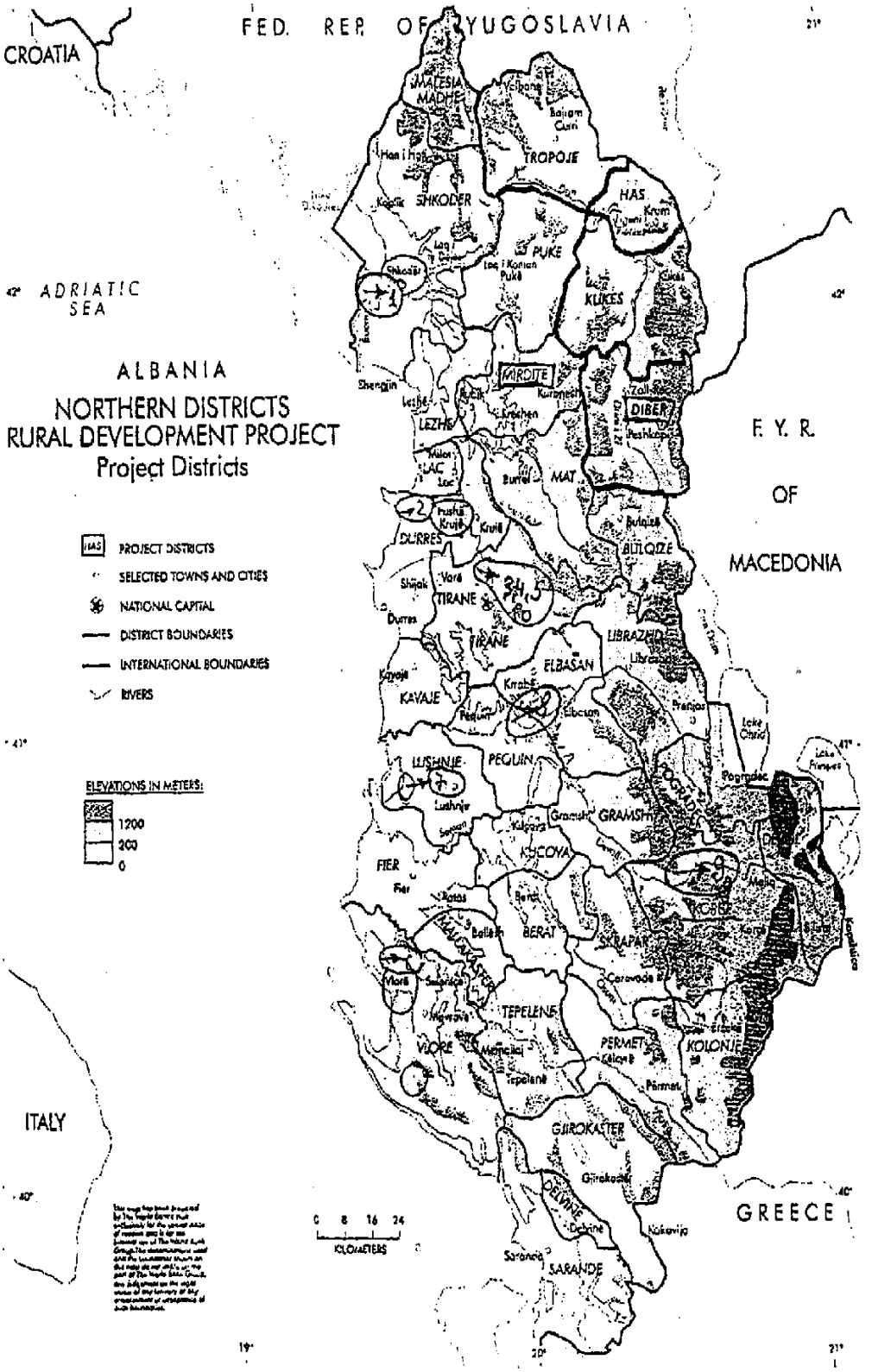
Albania is located in the area of Mediterranean climate, characterised by a dry and hot summer and rainy and soft winter in the western part. The eastern part of the territory is under the influence of continental air streams.

The annual average temperature is 17-6/C for the maritime area and 10.5-11/C for North-Eastern area of the country. The sunlight lasts from 2,100 to 2,700 hours per year.

The annual average of rainfall is 1,430 mm where 70 percent during autumn-winter seasons whereas, in particular areas the raining amounts 700 up to 2,900 mm. The vegetation is multifarious, 35% of the country surface is covered by woods and bushes.

The population of Albania is about 3.5 millions inhabitants (about 3.25 millions in 1990) whose 64 percent are living in rural areas. During the period 1991-1995 there is an obvious tendency of moving into urban areas.

Climate and land conditions are favourable for growing various agricultural plants. Under the former centralized economic system, their cultivation was organized by cooperatives and state agriculture enterprises, which had about 1,000-5,000 ha each. Their production activities were centrally controlled, basing on the self-sufficiency principle. The tremendous democratic changes in Albania, were followed by privatisation of land. Consequently the former agriculture structures and land was split into small private farms amounting about 400,000 with an average area 1.4 ha.


FED. REP. OF YUGOSLAVIA
CROATIA
ADRIATIC SEA
ITALY
GREECE
F. Y. R. OF MACEDONIA
ALBANIA
NORTHERN DISTRICTS
RURAL DEVELOPMENT PROJECT
Project Districts
PROJECT DISTRICTS
SELECTED TOWNS AND CITIES
NATIONAL CAPITAL
DISTRICT BOUNDARIES
INTERNATIONAL BOUNDARIES
RIVERS
ELEVATIONS IN METERS:
1200
200
0
KILOMETERS
MALESIA MADHE
TROPOJE
HAS
SHKODER
PUKE
KUKES
MIRDITE
DIBER
LEZHE
MAT
DURRES
BULQIZE
TIRANE
LIBRAZHD
ELBASAN
KAVAJE
PEQUIN
LUSHNJE
GRAMSH
KUCOVA
FIER
BERAT
SKRAPAR
TEPELENE
PERMET
KOLONJE
VLORE
GJIROKASTER
SARANDE

The agricultural land occupies about 700,000 ha where 575,000 ha out of this, is arable land and the rest is composed by fruit-trees, olive trees, vineyards and citruses.

About 38% of land area is sowed with cereals (mainly wheat and maize), 4% vegetables, 23% fodder, etc. There are opportunities of growing industrial agricultural plants such as: tobacco, cotton, sunflower, sugarbeet, etc.

A significant experience is acquired by cultivating these plants. Agricultural products are used mainly for consumption at home market and small quantities are exported (tobacco, medicinal plants, alcoholic beverages, etc.). A part of food needs is to be covered by the import during the near future as well.

The fulfilling of need for seed by producing them at home is actually a difficult undertaking. Coming from the former system, the seeds production (state controlled) is out of order, while new system of seeds production founded by the private entrepreneurs is still in starting point.

There are significant losses in the production because of diseases (mainly fungous and bacterial), of damages and impossible control of grasses using chemical means.

In order to eliminate negative a.m. effects of the climate etc. many varieties produced at home or introduced in the country are spread out widely. The old indigenous varieties have got an important place into the sowing structure (mainly vegetables, beans and fruit trees).

The forests are state property. They have a surface of 1 million and 38 thousands ha where 17% of them are coniferous (pine tree, fir tree, etc.) and 83% leafy (50% beech and oak and 33% shrubs). During the recent 4-5 years the wood area has been reduced drastically because of uncontrolled exploitation. Since 1955, the cutting rate has been and still remains higher than their growing rhythm. Consequently, the forest area is reduced about 290,000 ha. Much damages are caused by the following main damaging diseases: (*Thaumetopea*, *pytiocampa*), *Lophodermium pinastri, Endothia parasitica*, (*Myrospaera alphitaides*) etc.

CHAPTER 2
Indigenous Plant Genetic Resources

2.1 FOREST GENETIC RESOURCES

From the social-economic point of view, the most important natural woods are: beech, black pine, oak plantations being valid to the fulfilling of needs of wood industry, oak plantations and brushwood for the wood fires production.

The forest of beech and black pine are called trunks and the oak-plantations and shrubwoods like stumps.

The trunks are treated with successive cuttings system based on the providing of the natural renewing under the old seed massif.

According to studies 80% of traversed surface by the cutting system are covered by the natural renewing, in the non renewal part, supplementary works are made by seed sowing.

Because of lack of roads, part of the forest area about 84,000 ha remains still virgin. This area is being studied for biodiversity values etc.*;* at the end of the study, the area which is going to be maintained for genetic property conservation, will be decided further.

The stumps plantations are treated by plane cutting, which is based on the providing of the natural renewing by the scions coming out from the cut woods stamps.

The prospects of the forest management and inventory with other activities as agriculture, stock breeding, tourism, energy, etc.

The most important endangered species are:

List of endangered and scarce taxons of studied forest economies (according to IUCN classification)

I. (Ex. probably extinct)

1. *Aesculus hippocastanum* L.

II. Taxone qe mund te zhduken (ex. probably extinct)

2. *Leontopodium alpinum* Cass.
3. *Taxus baccata L.*

III. Taxone te rrezikuara (e. endagered)

4. *Agrimonia eupatoria L.*
5. *Anctostaphylos uva-ursi* (L.)
6. *Atropa belladonna L.*
7. *Betula pendula* Rothm.
8. *Chelidonum majus* L.
9. *Colchicum autumnale* L.
10. *Convallaria majalis* L.
11. *Corylus columa L.*
12. *Dryopteris felix-mas* (L.)
13. *Fraxinus excelsior L.*
14. *Gentiana Lutea L.*
15. *Hypericum perforatum L.*
16. *Juglans regia L.*
17. *Juniperus conmunis L.*
18. *Juniperus foetidissima* willd
19. *Juniperus oxicedrus L.*
20. *Orchis sp. divaricata*
21. *Otiganum vulgare L.*
22. *Picea abies* (L) Kasten
23. *Pinus peuce* griseb
24. *Quercus ilex* L
25. *Quercus robur*
26. *Salvia officinalis L.*
27. *Sambucus nigra* L.
28. *Sambucus racemosa L.*
29. *Satureja montana L.*
30. *Sidorites raeseri* Bovis et Heldr
31. *Tilia platyphyllos* sep.
32. *Tilia tomentosa* Moeneli
33. *Valeriana officinalis* L.
34. *Vibumum tinus L.*
35. *Ulmus laevis L.*

2.2 OTHER WILD SPECIES AND WILD RELATIVES OF CROP PLANTS

Albania is a country with rich flora. More than 3,200 species are known until now. They make up about 29% of European flora and 47% of Balkan flora. Among them, there are many wild species being relatives with cultivated plants, which have economic importance and direct using as medicinal and aromatic plants, stock breeding fodder as well as genetic breeding process. Among these plants, *Aegilops neglecta, A. geniculate, A. triuncialis, Dasypyrum villosum, Brassica villosa, Br. incana, Hordeum bulbosum, H. marinum, Daucus carota, Allium ampeloprasum, A. guttatum, Salvia officinalis, Menta sp., Trifolium repens, Tr. pratense, Dactylis glomerata, Lolium sp., Vicia sp.*, etc., can be mentioned.

Special values to be used have got wild species being genetic relatives with cultivated fruit trees spreading out throughout the country. Such are about 50 species like: *Malus silvestris, Pyrus piraster, P. communis, Prunus spinosa, P. cerasifera, Cerasus avium, C. mahaleb, Sorbus domestica, Cornus mas, Corylus spp., Morus spp., Punica spp., Citrus spp., Vitis vinifera, V. silvestris, Olea olivaster*, etc.

Some of those species are in danger to be disappeared by the genetic erosion whose factors are included. Hence, they have to be protected by the government, and the government should also proclaim the protected zones *in situ* etc.

2.3 LAND RACES AND OLD CULTIVARS

The use of old/traditional varieties dominates the cultivated plants. This is not a sign of undevelopment. From this side it is an indicator of high adoption degree of these varieties within very different conditions of land, climate, relief and peoples, demand to use them, and from the other side, it is a result of high level of agrarian culture and traditional selection carried out by farmers and Albanian masters.

Most of the traditional varieties are regularly compared with domestic and foreign modern varieties, but some of the traditional ones have not competed the last ones. Such varieties are those of seed French bean (cv. Shijaku, Kallmeti, etc.). Some maize cv with first early maturity in mountainous zones "Qarres" melon varieties, "Sanjollas" tomato, "Laknas", “Poce" pepper,

"Voskopi" brassica and numerous varieties of onion, leek, puddle, etc. (see attached list).

Regarding the fruit trees there are also many old varieties with special values spread out in farms like cherry tree, fig tree, plum tree, pear tree, apple tree, walnut tree, chestnut tree, olive tree, vine, etc.

Within 40-50 years the government did not favour the conservation and multiplication of home varieties. The organization of farms and agricultural cooperatives and planned sowing, imposed by the government, resulted to the genetic erosion act.

Consequently the traditional variety damages and loses into many plants have been numerous. The latest studies show clearly that, during the period 1941-1993 genetic erosion (given in percentage) has been respectively as in following: wheat species *Triticum aestivum, T. durum, T. turgidum* and *T. monococcum* 94, 100, 100 and 83, oat (*Avena* spp.) 76, barley (*Hordeum vulgare*) 59, vetch (*Vicia ervilia*) 78 and (*Vicia sativa*) 42.

Genetic erosion hazard is still evident because of the difficulties during the transition period.

CHAPTER 3
National Conservation Activities

3.1 *IN SITU* CONSERVATION ACTIVITIES

Actually Albania has not a national programme or any project on germplasm conservation *in situ*. Consequently genetic resources of some grassy species of spontaneous flora as well as wood species are reduced or are disappeared because of some special factors such as genetic erosion, unsustainable use and over exploitation (cutting and use as timber, fire wood, raw material in the paper industry, etc.). The following populations are actually endangered to disappear: *Pinus sylvestris, P. heldreichi, Abies sp., Fraxinus sp., Acer sp., Jugians regia, Ulmus sp., Prunus avium*, etc. In forest sector *in situ* there are some National Forest Parks such as Forest Park in Dajti Mountain Tirana, Forest Park of Llogara (Vlore), Forest Park of Divjaka (Lushnje). The multiplication of conservation forest surface *in situ* is foreseen by a finished programme which includes about 30,000 ha into following categories (according to IUCN classification):

National parks	16,310 ha
Natural strict parks	8,546 ha
Natural limit monument	1,660 ha
Natural conservation park	1,682 ha
Protected land and sea landscapes	500 ha
Numerous used zones	565 ha
Total	**29,593 ha**

In situ conservation is necessary to spread out into other important objects containing available germplasm like alpine meadows, zones or small areas (till special wood) by the wild fruit tree species, etc. In order to accomplish that, special studies and projects must be carried out, and find the financial resources.

3.2 *EX SITU* COLLECTIONS

Because of the lack of the National Genebank, collected germplasm is preserved in 11 special *ex situ* collections of Agricultural Research Institutes,

in the Agricultural University of Tirana, and in the Research Institute of Forest and Pastures. In these collections are maintained about 20,000 accessions. The majority of them, over 70% are cereals (mainly wheat and maize) and the other part consists in vegetables, forage, industrial crops, fruit trees, olive trees, vines, etc.

The majority part of collected accessions are introduced by foreign institutions. Approximately 60% of beans, 20% of maize and vegetables, 40% of fruit trees, olive trees and vine germplasm and less in other plants groups are indigenous species.

The indigenous materials are distinguished by having a high level of adoption to home conditions especially to the drought tolerance (maize, beans, pear tree, fig tree, cherry tree, plumtree, etc.), cold resistance (rye, apple tree, etc.), high dry matter content (tomato, etc.), resistance to the transport and conservation (some red onions varieties), attractive taste and aroma (melon, grape, etc.). Some groups of forest species like: black pine in Rove (Gramsh), Qumbrave (Korce) and Surroj (Kukes) are preserved in *ex situ* conservation.

The relevant Institutes, seeking the genetic breeding, use collected germplasm. The old indigenous material and other materials created in the selection process is used like parent material into various crosses. That happens when the genetic breeding programmes are based on this method. However, introduced germplasm remains still in the first place in genetic breeding programmes.

One part of home varieties, especially beans, vegetables, fruit-trees, vine, fodder, etc. is not yet in collection and is under the genetic erosion pressure. The Research Institutes have organized collection expeditions, but, because of financial difficulties those expeditions have been almost ceased during the recent 6-7 years.

Supported by IPGRI, three International Collecting Missions have been organized during the last years by the Agricultural University of Tirana (1993-1994) with participation of scientists from Gatersleben Genebank (Germany) and Germplasm Institute of Bari (Italy).

During those expeditions 500 home seed samples of cultivated plants and some wild species are collected. Those materials are preserving in Albania and their duplicates are in Germany and in Italy.

In general those collections contain available materials although they need another examination and classification according to their own genetic values.

After that, maybe one part of them can be required to be transferred or exchanged with other materials.

3.3 STORAGE FACILITIES

Collected germplasm can be preserved in packed cheese-bags or paper bags as well as glass wares setting them in separated rooms with shelves.

The material is preserved in temperatures ranging from 3 to 25/C and the air humidity 50-60%.

Because of the inappropriate and short time forms preservation, one part of the indigenous materials, having been earlier collected (1950-1960), are damaged (home maize populations, home variety of *Triticum durum, T. turgidum*, etc. species).

Being under those conditions, the part of home germplasm that would constitute the most important of the base collection is impoverished.

Material resources to be used in seed elaboration and preparation according to the standard of the humidity preparation and packing, etc. are also poor (equipment, apparatus, etc.).

During 1994 IPGRI supplied to the Agriculture University of Tirana some equipments and laboratory materials supporting it to elaborate and preserve better the present germplasm.

Being under such circumstances, the need of establishment of Albanian Genebank is urgent. It should have national character according to the size of germplasm being in preservation, and equipped with all its composing units (laboratories for seed analysis, information and documentation unit, unit of renewing and multiplying of seeds in greenhouses, insulators, and open field, unit of seed elaboration being in conservation as well as other natural environment in order to preserve the short, middle and long-term seed). In order to accomplish that the financial and technical assistance of international organizations or other donors is needed.

Some species of spontaneous home flora and introduced plants are preserved in Tirana Botanic Garden (about 200). However, during the last 4-5 years, its

normal functioning is facing difficulties. Fruit trees, olive, citrus and vine collections are preserved in field conditions. one part of them especially those of fruit trees and vine are damaged seriously during the transition occurring in Albania.

3.4 DOCUMENTATION

Gathering of data related to collected germplasm continue to be manual. It contains the fill files with special data for every plant species and accession. Those data are preserved in relevant institutes which have not published yet their catalogues.

Documentation contains data related to morphological and biological characteristics, output, chemical and technological characteristics (not often).

Up to now the collections and their documentation are set in research institutions, whose main target is breeding.

In this point of view, the documentation has been continuously ready to be used by relevant institute collectors (breeders) whereas other researchers coming from outside the institute cannot use easily the data (although there are no official obstacles).

This situation needs the improvement of the whole documentation set and especially its computerising.

During the last years, the institutes have got computers although they are not sufficient. However, their using is still limited by the fact that the staff is not quite qualified. Therefore, it would be better the staff should attend the 2-3 weeks training course. Hence, their computerised skills will be in due level.

There are less data on wild species having genetic relatives with cultivated plants. Regarding those species full knowledge in taxonomy expertise field are necessary. All documentation is duplicated. The data firstly are setting in the field paper or in other special ones, and then, they are registered in the main and permanent registers. They usually are in one sole institution.

3.5 EVALUATION AND CHARACTERISATION

The distinction of the both processes among themselves has been made just during the two last years. However, they have not yet included wholly into the documentation. The evaluation and the characterisation are made by relevant specialists of the institutions in collaboration with the technical staff being in disposal.

Because of the limited foreign links and the lack of descriptors, the last ones have not yet been used.

Plant breeding department (Agriculture University) and other research institutes need to have available plant descriptors which they work with. Given the limited availability for every plant, it would be better to provide them only to the main plants.

The listing of the data has been carried out taking into account the models from European institutions, however, the level of material and laboratory resources and production figures priority compared with those of qualities, have resulted to the fact that the main listing data are those of morphologic descriptions, phenologic taking notes, resistance to diseases, cold, drought, etc. For the maize, i.e. 20 indicators are registered.

The data of biochemical, chemical, physiological and technological character (in limited indicators) are made on a little part of germplasm. The expenses of the characterisation and evaluation as well as those related to collected germplasm are covered by the state. During the last 2-3 years, those expenses are financially backed by the Science and Technology Committee and relevant projects in the Ministry of Agriculture.

3.6 REGENERATION

Based on the fact that the germplasm is preserved in natural environment conditions, the whole renewing is made every 2-3 years, and in very rare cases, every 4 years (for potato it is made every year).

There are difficulties to the plant renewing by crossed fecundation, where pollinating insects are indispensable mainly to the greenhouses, isolators and the other material should be available to serve on protecting them from undesirable pollination.

Regularly the seed of an accession consists of the same generation, and the seeds which are just renewed are not mixed with "old" seeds.

3.7 FOREST GENETIC RESOURCES

The study of forest genetic property of Albania has been carried out by a questionnaire delivered to all forest experts on the ground directed from the of Forest and Pasture Research Institute. The ecological and dendrometric data as well as the evaluation on species situation, threatening to them and their damage level.

The domestic forest genetic plants are impoverished or are disappearing because of the breaking up new land, exploitation without any criterion, intensive genetic selection, lack of attention for the sufficient conservation, etc. The species having natural piece spreading out are especially threatened creating isolated populations.

The conservation of domestic ecotypes especially their limited use and devastated areas being under difficult ecological conditions have a particular importance. Such genetic resources in Albania are: mountain pine wood, Arneni, Hormoqi, Hartina, White fir tree, and Black Pine tree *Fraxinus* sp.; *P. platanus orientalis; Tilia sp.* wild poplar, birch tree, hazel tree.

Ex situ conservation is actually indispensable to be implemented on conservation of *Prunus avium, Fraxinus ornus* and *Fraxinus angustinfolia*. The *ex situ* conservation is also planed into collections derived from *Juglans regia* as forest wood to be used in timber processing.

The study of species considered as genetic resources was carried out through the investigation of origins tests. The origins of white fir tree (*Abies alba*), black pine tree (*Pinus nigra*) and sea pine (*Pinus pinaster*) are studied.

The *ex situ* conservation is actually indispensable to be applied for the *Prunus avium, Fraxinus ornus* and *Fraxinus angustifolia* preservation. It is planed also the *ex situ* conservation on origin collections of walnut tree as forest wood to be used in timber processing.

The *in situ* conservation for local species has been carried out basing on the following criterions:

- Species and their ecotypes which have been studied and characterized before, such as black pine tree, white fir-tree, beech, willows, poplars, mountain pine wood.
- Some species are envisaged as a priority without getting differentiated ecotypes by the special tests. The definition of the preserving surfaces is based on ecological bases and threatening dangers.
- For their, conservation in situ, the populations are materialized in limited forest groups with a protected zone established mainly in unexploited or slightly exploited woods like: mountain pine wood, Arneni, Artina, plane tree, linden tree.
- The international aspect of those reserves is also foreseen, although in present time they are made up by woods whose role in Albania economy is not important. Such are: Arneni, mountain pine wood.

The special files of in situ conserved groups and characterization are compiled basing in the following data: denomination, description of the area (geographical latitude and length, altitude over sea level, forest economy, plots in compliance with management projects or inventory studies, surface in ha).

Description of the station (land type, declivity, thickness, penetrability, shape, monthly rainfall, annual average temperature, degree C, hotter month, average temperature of colder month, bioclimatic floor and its characterization).

The files are preserved only one copy each in the archive of Research Institute of Forest and Pastures.

CHAPTER 4
In-Country Uses of Plant Genetic Resources

4.1 USE OF PGR COLLECTIONS

From the collected domestic germplasm, the vegetables, legumes, fruit trees, vine, olive, and some specific species are mainly used. Among them can be mentioned *Lycopersicon esculentum, Capsicum annum, Cucumis sativa, Zea mais, Phaseolus vulgaris*, apple tree, pear tree, cherry tree, plum tree, fig tree and olive species. During 3 last years are used 14-16 percent of vegetables accessions (mainly of tomato and pepper), and a smaller percentage of other plants. Agricultural Research Institutes, where the germplasm is used for the genetic breeding, are in reorganization process (including the drastic reduction of their staff). Usually for the larger groups like vegetables, are designated to operate 4 scientists for every group (vegetables, fruit tree, meadow), whereas for the specific species like: maize, olive tree are designated 3-4 scientists.

It is difficult to state which part of indigenous germplasm is represented in varieties and being also used in trade activities. In fact their introduction as parent components in breeding and the proper sowing for some of them is successively increasing (see 2.3 point). For this category, the Albanian farmers have gained the due experience and tradition.

4.2 CROP IMPROVEMENT PROGRAMMES AND SEED DISTRIBUTION

The genetic breeding programmes have complex functions and goals. These programmes aim to the breeding of domestic varieties, testing and adoption of introduced germplasm or creating of new varieties with specific characteristics as the disease and drought resistance, etc.

Genetic breeding activities are concentrated mainly on the fulfilling of the home food needs. The main objectives are the increase of production, extending of plant genetic basis and their sensitivity reduction towards disfavourable factors. Genetic breeding programs have been funded until now by the state. The new legislation allows the development of private activities of foreign organizations. The involvement of farmers in varieties, evaluation

activities would be difficult until the new breeding structures and seed production and distribution is stabilised. The formulation of a pricing policy for further promoting this activity would be indispensable.

4.3 USE OF FOREST GENETIC RESOURCES

The domestic forest material is used widely. The afforestation is carried out through sowing of seed obtained from selected plots designated to seed production. The forests law has sanctioned this activity which is managed by the Forests Institute in districts.

4.4 BENEFITS DERIVED FROM THE USE OF PLANT GENETIC RESOURCES

The advantages consists in:

1. The breeding of the indigenous varieties, creation of new varieties and then (selection) direct use to production.
2. The use of collected accessions to be exchanged with foreign germplasm.

Those advantages have been indirect, because according to the previous rules, the institutes, authors of the new varieties and the other specialists do not profit directly. In 1995, the State Commission of Varieties Qualifications has just started his activity, and the law "on the rights of the author" is going to be used in the agriculture field as well.

4.5 IMPROVING PGR UTILIZATION

The relations between genetic conservation, plant breeding, seed production and production need to be improved. In this context the institutional reform has to be completed, and the way of the barrier financial and technical overcoming which actually restrain the activities in those fields.

The majority of plant genetic resources value in Albania is related to their special values of their drought resistance, the high level of adoption and the early maturity, etc.
In the future, these values will be more demanded and more profitable. To that line, the improvement of the documentation work, the characterization and evaluation of the data and the better coordination with international organizations will help.

In this context, technical assistance together with laboratory means and the staff qualification dealing with this activity would be the most important. This assistance can be provided by international organizations or particular donor countries within 5-10 years.

CHAPTER 5
National Goals, Policies, Programmes and Legislation

5.1 NATIONAL PROGRAMMES

Agricultural research institutes which preserve and use genetic resources have got special programmes for the activities related to them. In 1993-1994 and now, these activities are organized in special (small) programs financially backed by MAF and Science & Technology Committee. These programs are covering renewing taking notes and the germplasm conservation.

However, the completion of compiling the national unique program of the plant genetic resources remains an immediate task. Until now the funding is only governmental whereas trade firms, non governmental organizations (NGO), farmers organizations or individual farmers have not yet backed the (PGR) activities. To that issue, PGR has not yet got a national committee supervising, suggesting or thinking of the policies to be implemented. This restrains the coordination of activities between institutes.

The particular programs on plant genetic resources are approved every year by the relevant research institutes. During the last 2-3 years their submission to the Science & Technology Committee is a condition for the endorsement of the annual fund (project).

In 1993 was passed a specific law on seeds, which regulates the plant genetic resources and their protection. However, this law needs further amendments.

5.2 TRAINING

The government policy has encouraged the training, qualification and scientific information exchange of the plant genetic resources.

During the last 2 years, some specialists dealing with collections in institutes have attended short-term training courses in Saragoze (Spain), Montpellier (France), Napoli (Italy), Germany, etc. It is necessary the relevant specialists

including the female grouped in the plant genetic resources activities have to be qualified onward in:

- Preparation technique of conservation specimens
- Accessions agronomic evaluation
- Taxonomy (This involves the identification of woods species)
- Germplasm health
- Germplasm conservation

Those courses cannot be attended in country. In order to organise these courses the international organizations, foreign scientific and university centres must support professionally and financially.

5.3 NATIONAL LEGISLATION AND OTHER POLICIES

Seeds activities including the plant genetic resources are arranged by the special law which anticipates the quarantine functioning, but it does not retrain the controlled movement, transfer, import or export of the seeds. Based on this law, the registered and certified seeds (including traditional varieties) can be traded. However, this law approved two years ago has just started to be implemented. It needs to be completed and amended onward adding a part for the "author rights", releasing the germplasm movement from some restriction, and increasing the structural competencies dealing directly with the administration of genetic resources, etc.

In this context, the technical staff has to get more rights as decision makers dealing with genetic resources, the organization of the unconditioned international collection missions.

The change of social economic system in Albania must be accompanied with the amendment of laws in all fields. There is a substantial need for technical assistance on legal issues.

CHAPTER 6
International Collaboration

The international collaboration, by the well known reasons, has been limited in Albania. It has spontaneously realized in many cases by some individual specialists or between Albanian institutes with relevant counterparts in foreign countries. Albania is member in FAO, but it has not until now realized any joint activities regarding the plant genetic resources. The collaboration with the scientific researching centres being part in the CGIAR network has been rather well. 20 years long, the Agricultural Researching Institute of Lushnja has kept its relations with CIMMIT providing wheat and Tritical germplasm. The three last years, the relations with IPGRI are strengthening.

The Agricultural University of Tirana has established has established fruitful relations with IPGRI which has organized some collection expeditions, and setting up its germplasm preservation laboratory. Some exchanging relations of germplasm are realized with IKARDA, while the Agricultural and Food Ministry is looking for the participation in fifth phase of ECPGR.

In such economic conditions of Albania it would be desirable the country takes part among the beneficial countries from the international organizations or the other donors regarding the laboratory equipments, training course, financial assistance on the collection expeditions organization, supplying with specialized publications on genetic resources, assistance on laws fields, methodical aspects on studying and preserving of germplasm, etc. For those matters, it would be better Albania establishes relations on program level with relevant centres of CGIAR, participate in governmental regional or bilateral initiatives where the country is not yet member.

Despite the collaboration of Agricultural University of Tirana with IPGRI an outstanding example is the finished study "Ecologic observation of virgin woods of Albania,, being financed by the World Bank.

CHAPTER 7
National Needs and Possibilities

Some of the main needs and possibilities of Albanian plant genetic resources are put in order in this part of the study. One part of them can be solved in country, whereas the other part requires international assistance and collaboration both in financial and scientific-methodical aspect.

The main ones are:

1. Compiling of the national program on the plant genetic resources, where the cultivated plants, wild species which are relatives with them, and woods resources of the Tirana Botanic Garden are included.
2. Founding of the National Committee on the plant genetic resources which have to be considered consultative scientific organ, without administrative functions whose members have to be chosen based on their scientific knowledge and not on their administrative position.
3. Organization of collecting expeditions of special plants and area or various plant in order to collect existing germplasm and to avoid the further act of genetic erosion.
4. Work management towards collections enriching based on the free exchanging acceptance of germplasm (unconditioned) between institutions at home and abroad.
5. Breeding of preserving conditions and evaluation of germplasm "*ex situ*" from the scientific institutions possessing germplasm.
6. Breeding and amending of legislation with respect to the plant genetic resources considering the trading possibility of the home old varieties.
7. Projecting and setting up of the Albanian National Genebank by its preserving capacity 25-30,000 accessions.
8. Determination and studying of the *in situ* preserving area of the special plant populations (meadow, wild forms of the fruit trees, wild cabbage, forest groups, etc.).
9. Work intensification on full characterization and evaluation of the collected germplasm especially on indigenous germplasm.
10. Equipping of institutions possessing the germplasm with relevant descriptors.

11. Short, middle and long-term qualification abroad of the specialists dealing with germplasm (including those of forests) as well as the attending of the special university courses on genetic resources.

12. Improving, adding and computerising of the germplasm data. The reorganization of the information and documentation system, including its duplicates.

13. Albanian germplasm evidence preserved in Genebanks of other countries and its gradual repatriation.

14. Preparing of the home germplasm duplicates and its preserving in other Genebanks based on previous agreements.

15. Studying of the germplasm state in each Institute and its classification into "base collection", "active collection".

16. Managing of collaboration together with organs and international institutions (FAO, IPGRI, etc.) participating in Regional programs of plant genetic resources (ECPGR) as well as bilateral cooperating with countries or institutions in various countries.

Among all of mentioned points (1, 2, 4, 8, 9 and 15) it is possible to be implemented independently at home, whereas the other points (3, 5, 6, 7, 10, 11, 12, 13 and 14) it is necessary to collaborate and provide financial, technical and material assistance from the other specialized organisms abroad (UNDP, FAO, W.B., IPGRI, IUFRO, etc.).

CHAPTER 8
Proposals for a Global Plan of Action

1. Accepting of free exchange of germplasm between institutions at home and abroad.
2. Organizing and backing of missions, collections in 5 years period (1995-1999).
3. Technical and financial support to the establishment of the National Genebank of Albania.
4. Improvement of preserving conditions and evaluation (improvement of laboratory conditions) of collected germplasm from the researching special institutes.
5. Qualification of scientific and technical staff working with plant genetic resources.
6. The description of state documentation and data information of germplasm being in preservation. The using of international descriptors to the *in situ* area as well.
7. Improvement, approvement and technical and financial support of the area being covered by *in situ* according to the national and international plan (of the specific countries).
8. Institutionalisation of international cooperation and participation in regional programs of plant genetic resources. Examination by the frame of participating in V-ECPGR and in EUROFORGEN.

The 8 points of this chapter expressing at the same time and according to priorities, the urgent needs to be implemented in Albania we think that they can be included in the Acting Global Plan.

APPENDIX 1
The Vegetable Autochthonous Old Cultivars which Continue to be Used

I. Tomato
1. Sanjollas
2. Sarreke
3. Kerre
4. Z. Kau
5. Agimi
6. Tirana

II. Pepper
1. Peza
2. Laknas
3. Gogozhare
4. Hundashke
5. Poce
6. Gjonica
7. Oblika
8. Vethke

III. Okra
1. Libohova
2. Oblika

IV. Cabbage
1. Mishia e Korce
2. E Voskopit

V. Lettuce
1. Marule e Korce

VI. Pea
1. Kokerr Madhe
2. Ndroqi

VII. Cucumber
1. I gjati i Korces

VIII. Melon
1. Qarres-78
2. Kallmi
3. Postriba
4. Qarres-Vashtmi
5. Farashuk
6. Korovec

IX. Pumpkin
1. Dimeroret
2. Has-Puke
3. I. Pites
4. Pjekesi i Kuq i Tiranes

X. Onion
1. E Drishtit
2. E Qilarishtit
3. E Mirasit
4. E Linit
5. E Peshkepise
6. E Rehoves

XI. Leek
1. Kashari
2. Belortaja
3. Berdica

XII. Garlic
1. Puka
2. Miloti
3. Korca