

THE STATE
OF THE WORLD'S
FOREST GENETIC RESOURCES
COUNTRY REPORT

IRAN

This country report is prepared as a contribution to the FAO publication, The Report on the State of the World's Forest Genetic Resources. The content and the structure are in accordance with the recommendations and guidelines given by FAO in the document Guidelines for Preparation of Country Reports for the State of the World's Forest Genetic Resources (2010). These guidelines set out recommendations for the objective, scope and structure of the country reports. Countries were requested to consider the current state of knowledge of forest genetic diversity, including:

- Between and within species diversity
- List of priority species; their roles and values and importance
- List of threatened/endangered species
- Threats, opportunities and challenges for the conservation, use and development of forest genetic resources

These reports were submitted to FAO as official government documents. The report is presented on www.fao.org/documents as supportive and contextual information to be used in conjunction with other documentation on world forest genetic resources.

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"Forests Genetic Resources in Iran"

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February 2012 (Zero Order Draft)

March 05, 2012 (First Order Draft)

April 19, 2012 (Second Order Draft)

June 13, 2012 (Final Report)

(Note: Please only cite to the Final Version with citation)

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February 2012 (Zero Order Draft)

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Section I: Executive Summary

According to the needs in national as well as international levels for preparation and reporting on the status of forest genetic resources following research has been taken. This research report mainly follows the guidelines prepared in cooperation with FAO in 2010. In first step all stakeholders was listed. Then all published flora were reviewed. Twenty two questionnaire tables were sent to the different expert in various regions. All available information on *in situ*, *ex situ* and *in vivo* forest projects was monitored. Based upon available data trend of last ten years were considered and effective driving forces on forest genetic resource management were highlighted. Challenges in the line with international agreements such as UNCBD and FAO strategy for forest genetic resources protection and conservation were discussed. Recommendations for preparation of “forest genetic resources national strategy” and “action plan” were provided.

Overview of Status, Trends of and Threats to Biodiversity: The Islamic Republic of Iran covers 164.8 million hectares situated where three climatic zones meet the Mediterranean, the arid West Asian and the temperate humid/semi-humid Caspian zone. The country is both a meeting point for many cultures as well as for many types of climate, land, water and biodiversity. Of the total land area, about 52.4% are rangelands; 8.6% are forests and 19.5% are deserts including bare salty lands. Being dominantly in an arid environmental zone, approximately 85% of Iran s agricultural lands are located in arid and semi-arid areas (Department of Environment, 2010).

Iran s location and geographic features thus cause the country to receive an annual rainfall of 240 mm, less than one third of the world average precipitation. As a result, most rivers are seasonal and their flows depend heavily upon the amount of rainfall (Department of Environment, 2010).

The country features three main climatic zones including Arid and semi-arid regions of the interior and far south, Mediterranean climate (mainly in the western Zagros mountains, the high plateau of Azerbaijan, and the Alborz mountains) and Humid and semi-humid regions (mainly in the Caspian, but also in west Azerbaijan and the southwest Zagros). In addition Iran s plateau with a vast desert located in the central areas, and two mountain ranges,

Zagros in the West and Alborz in the north, comprise a significant portion of its territory. Iran's topography has given rise to four floristic zones, namely: Irano- Touranian arid and semi arid deserts and Irano- Touranian arid and semi-arid mountains, Zagrosian, Hyrcanian, and Khalij-o- Omanian. Most of Iran s forest covers are located in Hyrcanian, Arasbaranian and Zagrosian zones (Department of Environment, 2010).

The complex and varied climates, topography, geological formations and anthropological management of natural resources have led to a varied and unique biological diversity. In the Iranian ecosystems **over 8,000 species of plants**, 140 species of mammals, 293 species of birds, 219 species of reptiles, 112 species of fishes and 23 species of amphibians, have been recorded. This includes a large number of wild relatives of commercial species both plants and animals, confirming Iran s status as a centre of genetic biodiversity. Because of its large size and varied ecosystems, Iran is one of the most important countries in the Middle East and Western Asia for conservation of biological diversity. Habitat diversity in Iran allows for a wide range of animals to inhabit in Iran (Department of Environment, 2010).

With regards to ecosystem diversity of marine and coastal zones in the North and South of the country, it consists of 25 ecological types and units, in which the most important are coral reefs, bays and small islands (Department of Environment, 2010).

Although much of Iran is extremely dry, the wetlands of Iran are globally significant; large populations of migratory birds winter at these wetlands or use them on their way to and from wintering areas in Africa or the Indian sub-continent. The country possesses a great diversity of wetland ecosystems, most of which can be grouped into six major systems. Also except for the interior deserts and the lowlands along the Caspian Sea, Persian Gulf and Gulf of Oman, half of Iran is composed of high mountains (Department of Environment, 2010).

In order to conserve existing biodiversity of the country, representative samples of the nature of land have been selected and are being conserved under different categories such as **Protected Areas, National Parks, Wildlife Refuges and National Natural Monuments**.

Having this rich and great diversity in the country, several factors such as population growth, unsustainable and low performance utilization of basic resources and destructive human activities especially in rural settlements is threatening the biodiversity of the country. Extensive logging and clearing of forests for agriculture have nearly eliminated the forests ecoregions. The invasion of non-native plant species has also posed a serious threat to native plant communities. Overgrazing and shrub collection for fuel is markedly reducing plant biomass and altering plant communities. Diversion of water and increasingly frequent drought is drying wetlands and rivers with unknown effects on aquatic biodiversity. Hunting and trapping of waterbirds in wetlands of Iran and important bird areas is leading to the loss of population and some important endangered bird species.

It is very difficult to assess biodiversity trends in Iran since the national biodiversity indicators are not fully developed. However, what is obvious from reports, data and statistics in general biodiversity of Iran in different ecosystems and at different levels is degrading. Although the Iranian government has taken various measures to combat degradation and rehabilitate degraded natural resources but different factors such as

prolonged and frequent drought cycles and maximized use of soil, water, and plant cover has aggravated the biodiversity decline in Iran. For example the country's population is more than 73 million with an annual average growth rate of about 1.3% per annum. More than 21 million of the population live in rural areas (Department of Environment, 2010).

Keywords: Forest genetic resources, forest trees, forest flora, Iranian vegetation cover zones



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Section II: Introduction to the issue of forest genetic resources and forest sector in the country (Tables 1 and 2)

The evaluation of forest genetic resources provides a basis for planning the conservation, sustainable use and development of forest genetic resources at the national level and contributes to regional and global actions.

In this research report, the following topics are considered: 1) The state of forest genetic resources in the country and their roles in production systems, including associated biodiversity and the factors driving changes; 2) The current contribution of forest genetic resources to sustainable forest development, and food and agriculture; 3) How the contribution of forest genetic resources to sustainable forest development, and food and agriculture can be enhanced, identifying opportunities and obstacles, as well as strategies to realize the opportunities and overcome any obstacles 4) Needs and priorities for capacity building to enable the conservation, sustainable use and development of forest genetic resources

Background

The preparation of the country report on the forest genetic resources (FGRs) is the most important step in the process for preparing “The Report on the State of the World’s Forest Genetic Resources”. The preparatory process should be considered as strategic planning exercise and the report itself is a tool for the better assessment and sustainable management of forest genetic resources in the country. Preparation of a country report provides an opportunity to engage and stimulate the interests of a wide range of stakeholders to reflect on the state of forest genetic resources of the country, on what has been accomplished and what remains to be done, and to identify the needs required to achieve their conservation and sustainable use.

In global level the attention to the forest genetic resources were made in different countries and in various levels. In European countries “EUFORGEN” (European Forest Genetic Resources Programme) were established in 1994 for cooperation among European countries on conservation and sustainable use (Koskela et al., 2007). This programme includes in its agenda investigation of climate change impacts on FGRs (Koskela et al., 2007). Several educational and implementing guidelines in this regards have been provided by different international bodies such as FAO, IPGRI (Mohd Said Saad and V. Ramanatha Rao, 2001). Also IPGRI has published a guideline for wild tree *in situ* conservation to use success stories (Heywood and Dulloo, 2005).

EUFORGEN in cooperation with IPGRI has prgnized a workshop in year 1995 on conservation of forest genetic resources in Europe (Turok et al., 1998). Also IPGRI in cooperation with EUFORGEN has published useful experiences on tree species based such as *Populus nigra* (Lefèvre et al., 2001). FAO in cooperation with Silva Mediterranea prepared a programme for 2009 – 2012 for forest genetic resources conservation in Mediterranean regions (Ducci Fulvio, 2011).

In Central Asia: Over the course of the 3-day workshop 25experts from Kyrgyzstan, Kazakhstan, Tajikistan, Uzbekistan and the UK evaluated 96 Central Asian tree and shrub species according to the IUCN Red List categories and criteria (IUCN, 2001). Twelve tree and shrub taxa listed in the Red Data Book of Turkmenistan (Atamuradov et al., 1999) were not evaluated as no national experts from Turkmenistan attended the workshop. The full Red List of globally threatened trees from Central Asia with associated categories and criteria can be found on page 13. A summary of the results of the evaluation are in the table below (Eastwood et al., 2009):

CENTRAL ASIA



SUMMARY OF RESULTS	
Conservation Status	Number of taxa
Extinct	0
Critically Endangered	23
Endangered	13
Vulnerable	8
Near Threatened	5
Data Deficient	17
Least Concern	30
Total Evaluated	96
Not Evaluated	12

In Iran there are some published papers on forest genetic resources, like Genetic diversity of oriental beech (*Fagus orientalis* LIPSKY) forests cover over the Hyrcanian zone (Salehi Shanjani et al., 2002); “Microsatellite analysis for differentiation and identification of the source tree of *Fagus orientalis* Lipsky” (Salehi Shanjani et al., 2008); “Temporal genetic structure of Iranian populations of beech, *Fagus orientalis* (*Fagaceae*)” (Salehi Shanjani et al., 2010), (Ghazanfari & Asadi) and reports (Hedayati) are available. A Red Data Book of Iran is also published in 1999 (Jalili and Jamzad, 1999). But there is not an integrated list of forest genetic resources by various means of its application.

Genetic resources, including forest genetic resources, are among the most valuable assets that a country possesses. The FAO has for many decades acknowledged the importance of forest genetic resources. In 1967, the FAO Conference recognized that forest genetic diversity was increasingly being lost and requested the establishment of the Panel of Experts on Forest Gene Resources (the Forest Gene Panel), to help plan and coordinate FAO's efforts to manage genetic resources of forest trees. FAO's activities on forest genetic resources are an integral part of the FAO Forestry Programme, and contribute to other programme components, such as national forest programmes, sustainable forest management, tree breeding and plantation development, protected areas management and global forest resources assessments .

For many decades, the Forest Gene Panel has guided FAO's work on forest genetic resources and reporting on progress made to the Committee on Forestry (COFO). This guidance has helped to ensure that forest biological diversity, at all levels, is conserved, managed and sustainably utilized in support of local and national forest development, including food security, poverty alleviation, environmental conservation, economic and social advancement and the maintenance of cultural and spiritual values .

The FAO Commission on Genetic Resources for Food and Agriculture (the Commission) is a FAO intergovernmental body, which as at 1 March 2010 has 172 members, and is the only international forum which specifically develops policies for genetic resources for food and agriculture. At its 11th Regular Session, the Commission acknowledged the urgency to conserve and sustainably utilize forest genetic resources to support food security, poverty alleviation and environmental sustainability; the Commission also approved the inclusion of forest genetic resources in its Multi-Year Programme of Work (MYPOW). It also agreed to the preparation of a country-driven first report on The State of the World's Forest Genetic Resources (SoW-FGR). The Commission recommended that COFO and the FAO Regional Forestry Commissions be fully involved in the preparation of The State of the World's Forest Genetic Resources, and that work be undertaken in synergy with relevant regional and global programmes and instruments, such as the Convention on Biological Diversity and the United Nations Forum on Forests. The 34th Session of the FAO Conference welcomed the Commission's decision to undertake preparation of a report on the SoW- FGR within its MYPOW1

During its 15th Session, the Forest Gene Panel highlighted the importance of examining a number of key issues in assessing the status and trends of forest genetic resources management, including: climate change, bioenergy, poverty reduction, forestry products supply enhancement, and new and traditional methods and technologies in genetic conservation and tree breeding. As much as feasible, the impact of these issues on forest genetic resources will be examined in preparation of the SoW-FGR with several of these issues being addressed through thematic background studies. A proposed table of content for the SoW-FGR has been elaborated .

Recognizing the importance of forest genetic resources and the importance of their good management, the Committee on Forestry (COFO), at its 19th Session, in March 2009, supported the recommendation of the Commission on Genetic Resources for Food and Agriculture and the FAO Panel of Experts on Forest Gene Resources that FAO prepare a report on The State of World Forest Genetic Resources, for 2013, which would serve as a reference for action at the national, regional and global levels. The Committee urged member countries to collaborate with FAO and partner organizations in producing this report .

At the Commission's request, FAO prepared for consideration by the Commission, at its 12th Regular Session, a proposal for the process of preparing The State of the World's Forest Genetic Resources, including an indicative outline for this first report, an indicative list of thematic studies and an indicative timetable for undertaking The State of the World's Forest Genetic Resources . The Commission endorsed the indicative outline, agreed on the indicative timeline provided in the Strategic Plan 2010-2017 for the implementation of the Commission's MYPOW, including the finalization of the draft guidelines for Country Reports for Forest Genetic Resources, and the process for countries to officially identify and communicate to FAO their National Focal Points for the preparation of Country Reports. The Commission also agreed to establish an Intergovernmental Technical Working Group on Forest Genetic Resources (ITWG) and agreed on its Statutes .

The Commission, at its 12th Regular Session, stressed that the process for preparing The State of the World's Forest Genetic Resources should be based primarily on Country Reports on Forest Genetic Resources, with support through thematic studies and reports from international organizations as well as inputs from relevant stakeholders.

Environment - current related issues: deforestation; overgrazing; desertification; wetland losses from drought; soil degradation (salination); water pollution from raw sewage and industrial waste;

Environment - international agreements: party to: Biodiversity, Climate Change, Desertification, Endangered Species, Hazardous Wastes, Marine Dumping, Ozone Layer Protection, Wetlands
signed, but not ratified: Environmental Modification, Law of the Sea, Marine Life Conservation

Natural hazards: periodic droughts, floods; dust storms, sandstorms;

Introduction

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report mainly follows the guidelines prepared in cooperation with FAO in 2010. In first step all stakeholders was listed. Then all published flora were reviewed. Twenty two questionnaire tables were sent to the different expert in various regions. Information on all available *in situ* and *ex situ* forest projects was monitored. Based upon available data trend of last ten years were considered and effective driving forces on forest genetic resource management were highlighted. Challenges in line with international agreements such as UNCBD and FAO strategy for forest genetic resources protection and conservation were discussed. Recommendations for preparation of forest genetic resources national strategy and action plan were provided.

In general and in relation to all aspects of the plant protection Iranian Research Institute of Plant Protection (IRIPP) (ex. Plant Pests and Diseases Research institute) was established in 1943. Their launching research institute presently comprises ten research departments with 32 provincial branches covering all agro-ecological zones; execute approximately 700 research projects per year. However, publishing 160 scientific papers, conducting 90 thesis, presenting 130 scientific lectures, training 130 trainees per year are still some of the un-stated scientific potential forwarding ahead of our mission-oriented IRIPP.

IRIPP Departments are: Agricultural Entomology, Agricultural Zoology, Biological Control, Botany, Insects Taxonomy, Nematology, Plant Diseases, Plant Viruses, Pesticides, and Weeds.

IRIPP Major Fields of Work in the department of Botany are: 1) Collection, identification and preservation of the flora (Flowering and non-flowering plants, Fungi, Lichens, Weeds of various crops, Medicinal and pesticide plants) of Iran in the Herbarium Ministerii Iranici Agriculture ("IRAN"). 2) Carrying out special botanical and mycological research projects (particularly taxonomic) and collaborative projects with other departments of the Institute.

Forest genetic resources study methods

In situ, *Ex situ*, UNEP (1992) definitions,

Ex situ, seed conservation, gene banks, *in vitro* conservation, DNA preservation, (Chapter 6: *In vitro* .., Hor Yue Luan, in Establishment and management of field gene bank, IPGRI, Citation: Mohd Said Saad and V. Ramanatha Rao, eds. 2001. Establishment and Management of Field Gene bank, a Training Manual. IPGRI-APO, Serdang).

For *in vitro* conservation of genetic resources similar to seed conservation, two type of gene bank are used: 1, *in vitro* active gene bank (IVAG), and 2, *in vitro* base gene bank (IVBG)

In IVAG methods samples are keeping under slow growth rate

And in IVBG method samples are keeping under cold and freezing conditions (cryo preserved), the temperature usually is -196°C by using LN – liquid nitrogen.

Biodiversity conservation is accomplished in a number of ways. *Ex-situ* methods focus on species conservation in botanic gardens, zoos, gene banks, and captive breeding programs. *In-situ* methods use conservation areas as "warehouses" of biological information. Many scientists and conservationists feel that until methods are available to discern easily which of the millions of species and varieties will have economic value, *in-situ* conservation through the protection of natural areas should be the primary means for the maintenance of

these resources. However, a rigid preservation approach is virtually impossible to implement and even less likely to be maintained over time. Considering trends in population growth and the urgency of economic development--especially in the developing countries--a more appropriate response would be to pursue proactive alternatives to high-impact development activities, and to implement carefully formulated strategies for in-situ methods that would include protected areas in the development mix (Saunier and Meganck, 1995).

Forest genetic resources issues

The topics of the forest genetic resources: Genetic diversity, Ecologic adaptation, Improvement methods, Isolation and selections, Biochemical markers, Genetic markers, Genetic finger prints, Quantitative genetic diversity

Genebank managers and conservationists concerned with both *in situ* and *ex situ* management try to ensure that they conserve as much as possible of the extant genetic diversity of the species with which they work. The effectiveness with which they do this depends to a large extent on the genetic information available on the germplasm with which they work. Molecular markers provide genetic information of direct value in key areas of conservation both *ex situ* and *in situ*. For **ex situ conservation** the key issues are (Karp et al., 1997):

acquisition: Data on the diversity of existing collections can be used to plan collection and exchange strategies. In particular, calculations of genetic distances based on molecular data can be used to identify particular divergent sub-populations that might harbour valuable genetic variation that is under-represented in current holdings.

maintenance: Genetic data are essential to identify duplicate accessions in order to ensure best use of available resources. **Genetic markers** are also needed to monitor changes in genetic structure as accessions are generated. **Molecular markers** provide markers suitable for both of these.

characterization: The genetic diversity within collections must be assessed in the context of the total available genetic diversity for each species. Existing passport data document the geographic location where each accession was acquired. However, passport records are often missing or incorrect. Molecular markers may extend and complement characterization based on **morphological** or **biochemical descriptions**, providing more accurate and detailed information than classical phenotypic data.

distribution to users: Users of collections benefit from genetic information that allows them to identify valuable traits and types quickly. On a more fundamental level, molecular marker information may lead to the further identification of useful genes contained in collections. Molecular data on diversity may provide essential information to develop core collections (Hodgkin et al. 1995) that accurately represent the entire collection.

NOTE:

Molecular markers may therefore be used in four types of measurements needed for effective *ex situ* conservation, all of which are useful in resolving the numerous operational, logistical, and biological questions that face genebanks managers (Kresovich et al. 1992). These are:

identity: the determination of whether an accession or individual is catalogued correctly, is true to type, maintained properly, and whether genetic change or erosion has occurred in an accession or population over time;

similarity: the degree of similarity among individuals in an accession or between accessions within a collection.

structure: the partitioning of variation among individuals, accessions, populations, and species. Genetic structure is influenced by *in situ* demographic factors such as population size, reproductive biology and migration.

detection: the presence of particular allele or nucleotide sequence in a taxon, genebank accession, *in situ* population, individual, chromosome or cloned DNA segment.

Those concerned with *in situ conservation* need to ensure that appropriate populations are identified and managed in such a way that they survive and continue to evolve. Their responsibilities can include (Karp et al., 1997):

location: the identification of populations which should be conserved based on the genetic diversity present as well as on the value of the resource and the threats to it. Crucial to this is a knowledge of the extent and distribution of genetic diversity in species populations which should optimally include molecular data.

management: the development of management plans to monitor the changes in target populations over time and ensure their continued survival. The populations maintained *in situ* constitute part of ecosystems and both intra- and interspecific diversity must be maintained over time at appropriate levels.

accessibility: *in situ* conservation is most commonly of interest in forest genetic resources conservation and that of wild crop relatives but it is also of increasing interest for on-farm conservation of traditional cultivars. Genetic resources conserved in this way remain accessible to the communities who depend on them. Managers need to ensure they are also accessible to other users and that sufficient genetic information is available to assist such users.

Within the context of *in situ* conservation, therefore, **identity, similarity, structure and detection** are also important and can be usefully investigated using molecular techniques (Karp et al., 1997).

Forest genetic resources study methods

IUCN categories as approved by the 51st meeting of the IUCN Council, Gland, Switzerland, 9 February 2000 (IUCN, 2001).

Extinction is a chance process. Thus, a listing in a higher extinction risk category implies a higher expectation of extinction, and over the time-frames specified more taxa listed in a higher category are expected to go extinct than those in a lower one (without effective conservation action). However, the persistence of some taxa in high-risk categories does not necessarily mean their initial assessment was inaccurate (IUCN, 2001).

All taxa listed as Critically Endangered qualify for Vulnerable and Endangered, and all listed as Endangered qualify for Vulnerable. Together these categories are described as 'threatened'. The threatened categories form a part of the overall scheme. It will be possible to place all taxa into one of the categories (see Figure 1) (IUCN, 2001).

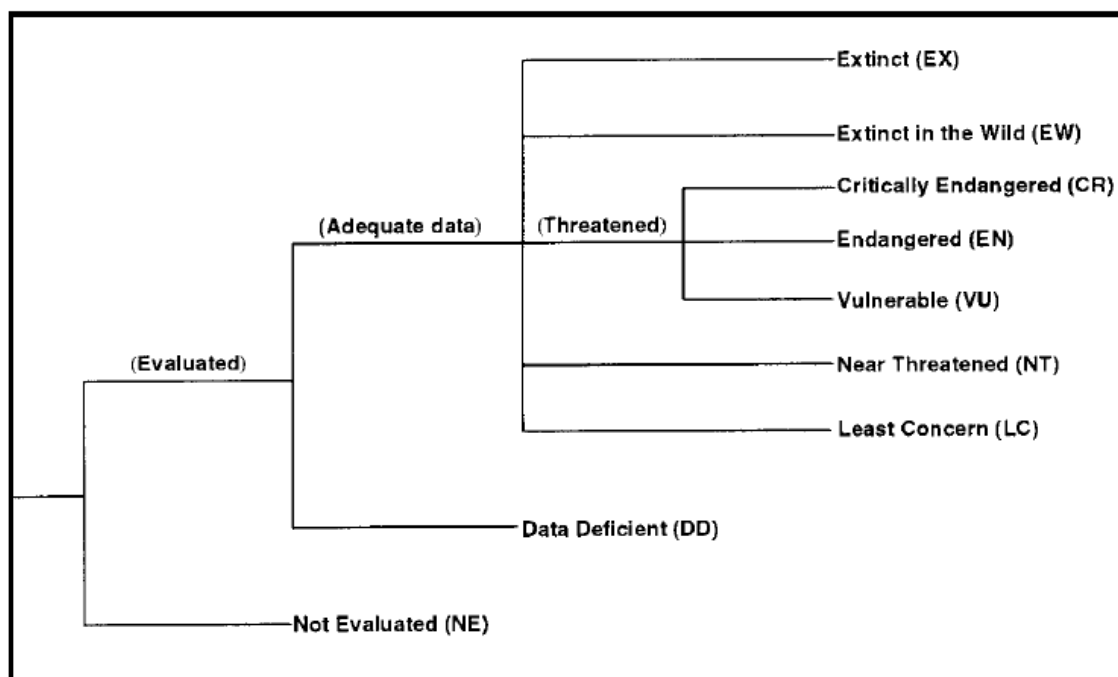


Figure 1. Structure of the categories.

Forest ecosystems and vegetation cover in Iran:

Iran is located in the palaeartic realm and is considered the center of origin for many genetic resources of the world. Biodiversity of the country is influenced by its various climates (from alpine to sub-tropical), altitude, geological formation and physiography. Many plant species, some unique to Iran, thrive throughout the country. In fact Iran among the south western countries of Asia is the most diversified biological regions. Biogeographical provinces of Iran include (Taeb, 1995):

- 1- Pontic: Hyrcanian 3.08%; Arassbaranian 0.16%
- 2- Irano-Anatolian: Irano -Touranian 64.09% Zagrosian- 6.57%
- 3- Nubo-Syndian and Arabian- Saharo 26.07%.

The total forest and woodland cover of Iran is estimated at 18.04 million hectares. Out of this 3.8 million hectares is forest and the rest is categorized as woodlands. Most of the commercial forests of the country are located in the north. Recent studies indicated that out of 1.9 million hectares of northern forests, only 1.3 million hectares can be classified as commercial forests (Taeb, 1995).

1- Euro – Siberian region

1-1- Hyrcanian province (Hyrcanian & Arasbaran forests – North & North-West of Iran)

The Caspian Hyrcanian forests: Caspian broadleaf deciduous forests extend for 800 km in length and cover an area with 1,925,125 hectares in the mid elevation of the middle altitudes of the Alborz Mountain, whilst it was some 3.4 million hectares 45 years ago. The key trees of this area are: *Fagus orientalis*, *Carpinus betulus*, *Tilia rubra*, *Taxus baccata*, *Ulmus glabra*, *Quercus castanefolia*, *Parrotia persica*, *Alnus glutinosa*, *Punica granatum*, *Paliurus spira-ehristi*.

The Caspian Hyrcanian Mixed Forests experience abundant rainfall and snowmelt that runs off the north slope of the Alborz Mountain. It has high production capacity due to humid temperate climate and suitable soil. These forests sweep down to the coastal plain south of the Caspian Sea, where they eventually yield to coastal lagoons, swamps, and salt marshes.

Hyrcanian Region (Taeb, 1995): Lowland species elevation up to 300 m: *Populus caspica*, *Alnus glutinosa*, *Cetis australis*, *Buxus hyrcanus*, *Pterocarya fraxinifolia*, *Gleditsia caspica*, *Quercus castaneifolia*, *Acer velutinum*. Elevation up to 700-900 m: *Parrotia persica*, *Carpinus betulus*, *Zelkova carpinifolia*, *Celtis caucasica*, *Tilia platyphyllos*, *Taxus baccata*, *Acer cappadocicum*, *Diospyrus lotus*. Elevation up to 1800-2000 m. Mainly *Fagus orientalis plus Alnus subcordata*, *Ulmus glabra*, *Sorbus torninalis*. Over 2000 m: *Quercus macranthera*, *Carpinus orientalis*, *Juniperus communis*, *Juniperus sabina*, *Cotoneaster spp.*, *Crataegus spp.*

Arasbaran broadleaf deciduous forests: in the northwest of Iran, with many endemic species, very degraded at present, with only 60,000 hectares remaining of the original 500,000.

Arassbaramian Region (Taeb, 1995): *Quercus macranthera*, *Q. komarovii*, *Viburnum lantana*, *Cornus mas*, *Cotinus coggyria*, *Viburnum opulus*, *Juniperus foetidissima*, *Pyrus elaeagnifolia*.

2- Irano – Turanian region

Irano-Touranian evergreen juniper forests: almost all high-mountain environments of the country outside the deciduous forest areas, were covered by the Persian Juniper (*Juniperus polycarpus*), currently the remaining parts are scattered spots.

2-1- Kurdo – Zagrosian province (Zagros forest zone - West of Iran)

The Zagross region is located in the west of Iran running from northwest to southeast. This region is one of the strategic and valuable locations in Iran. Total forest area is about 5.2 million hectares. Flora and fauna is very rich with high diversity. There are between 2000 to 2500 species including 7-10% endemic rare species and 8% trees and shrubs. Population pressure has led to encroachments on the forestland, for agricultural and garden use, collection of fuelwood, mining, human settlements, grazing, utilization of branches and leaves of oak trees for feeding domestic animals, etc. People have been forced to be highly dependent on these degraded forests and so the forests have been reduced quantitatively and qualitatively. Since 1965 natural regeneration has been severely reduced while pests and diseases have increased. The history of management regimes in these forests from 1961-2002 includes (Fattahi, 2003):

- 1- Exploitation of the forests for charcoal projects by government permission from 1960-1970.
- 2- The first management plan started in 1972 with the aim of reforestation and protection, but it did not achieve its aims.
- 3- The second phase of management plans was to cover 1981-1991, but was never implemented.
- 4- In the third phase, integrated management plans in vast areas were begun from 1996-2001, directed only by governmental experts with little participation by the people.
- 5- Finally in the latest governmental guideline, in order to provide a complete and up-to-date picture of integrated management plans in which people participated, equity and settlement schemes to other areas were considered.

Zagros broadleaf deciduous forests: consist mainly of oak forest in the west of the country. This forest has an area of 5.5 million hectares and currently produces 8 tons/hectare biomass compared to 12 million hectares and 125 tonnes/hectare five decades ago. Flora and fauna is very rich in diversity consisting of 2000-2500 plant species out of which 7-10% are endemic and rare species. Trees and shrubs include more than 150 species.

Zagross Region (Taeb, 1995): Endemic species include: *Quercus spp.*, *Crataegus spp.*, *Pyrus communis*, *Pyrus glabra*, *Pyrus syriaca*, *Amaggyrus foetida*, *Acer cineraescens*, *Myrtus communis*, *Amygdalus communis*, *Fraxinus persica*.

2-2- Armeno – Iranian province (Azerbaijan, Albourz, Khorasan – Juniper forests)

Irano- Touranian Region (Taeb, 1995): Comprises the entire mountainous center of Iran: *Amygdalus scoparia*, *Onobrychis cornuta*, *Acantholimon spp.*, *Acanthophyllum spp.*, *Astragalus spp.*. Lowland areas: *A Artemisia herba-alba*, *Zygophyllum spp.*, *Amygdalus spp.*, *Salsola tomentosa*, *Rosa persica*, *Tamarix spp.*. Khalidjo-Ommanian region: Consist

of all southern coastal area of Iran. *Capparis decidua*, *Acacia ehrenbergiana*, *Prosopis cineraria*, *Rhizophora mucromata*, *Avicinia officinalis*.

2-3- Central Iranian province (Central and East part of Iran - No important forest)

3- Saharo – Sindian region

3-1- Nobo - Sindian or South – Iranian province (South of Iran)

Semi-savanna thorn forests: with an area of about 2.8 million hectares, cover narrow bands in the west of the country and a wider belt in the south along the Persian Gulf and the Sea of Oman. The biomass of these forests is currently estimated at 2 tonnes/hectare. Unfortunately, no data are available on the former area and biomass of these forests. The diversity of species in these forests is lower compared to other forest areas. Main parts of the Mangrove forests can be seen in this area.

Of the total area of the country s forest cover only some parts of the Caspian Hyrcanian forests in the north are used for commercial purposes. Other forest areas are important for conservation and protection. Almost all forest areas are adversely under threat by different factors such as fire, grazing, flood, diseases and uncontrolled utilization.

Study method

Library flora investigation

Expert meeting review

Field trip

National workshop on “Forest Genetic Resources in Iran”

Final concluded listing

Analysis of the main threats to National Biodiversity and their Implications could be listed as follow (Department of Environment, 2010):

- 1- Over Exploitation of Water Resources and Unsustainable Development of Agricultural
- 2- Unsustainable land-use conversions
- 3- Over-grazing
- 4- Hunting and Trapping
- 5- Extended Use of Fertilizers and Pesticides
- 6- Natural Drought
- 7- Deforestation and Land Degradation
- 8- Climate Change
- 9- Desertification

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Section III: Main body of the research report

This research report mainly follows the guidelines prepared in cooperation with FAO in 2010. In first step all stakeholders was listed and contacted (Dr. Massoumi). Then all published flora were reviewed (Mozafarian, Sabeti). Twenty two questionnaire tables were sent to the different expert in various regions. All available information on *in situ*, *ex situ* and *in vivo* forest projects was monitored. Based upon available data trend of last ten years were considered and effective diving forces on forest genetic resource management were highlighted. Challenges in line with international agreements such as UNCBD and FAO strategy for forest genetic resources protection and conservation were discussed. Recommendations for preparation of forest genetic resources national strategy and action plan were provided.

According to the U.N. FAO, 6.8% (FRWO site in reported in 2012: 8%) or about 11,075,000 ha of Iran is forested, according to FAO. Of this 1.8% (200,000) is classified as primary forest, the most biodiverse and carbon-dense form of forest. Iran had 844,000 ha of planted forest. Iran's forests contain 258 million metric tons of carbon in living forest biomass. Biodiversity and Protected Areas: Iran is home to at least 8000 species of vascular plants. 0.0% of Iran is protected under IUCN categories I-V.

Land use (%):

arable land: 8.72%

permanent crops: 1.39%

other: 89.89% (2001)

Trends in Total (Net) Forest Cover, 1990-2010

Total forest cover (1000 ha)

1990	2000	2005	2010
11075	11075	11075	11075

Data show no changes on forest cover between 1990 – 2010.

Trends in Natural Forest Cover (Deforestation), 1990-2010

Forest cover (excluding planted forests) (1000 ha)

1990	2000	2005	2010
10231	10231	10231	10231

Trends in Primary or Old Growth Forest Cover, 1990-2010

Primary forest cover (1000 ha)

1990	2000	2005	2010
200	200	200	200

Trends in Planted Forest Cover, 1990-2010

Planted forest cover (1000 ha)

1990	2000	2005	2010
844	844	844	844

Table 1. Forest characteristics and areas (FRA, 2010)

Main forest characteristics	Area (ha)
Primary forests	200 000 (2% of total forest)
Naturally regenerated forests	10 031 000 (91%) (11 075 0000 -total forest – 7%)
Other wooded land	5 340 000 (ha) (3% of total land)
Planted forests Reforestation Afforestation	844 000 (8% of forest areas)

Please give an estimate of the area covered by agroforestry systems (information not requested in FRA reporting)

Table 2. Forest ownership and area (FRA)

Forest ownership	Area (ha)
Public	100%
Private	Only fast growing plantation (poplar & other fast growing trees)
Others	

The trends in forest areas conservation and management were increased over the past 10 years? Their main driving forces are included of forest wood products and environmental sympathy in the society.

The forest resources play important role in meeting the current demands for forest products in the country. But it is not sufficient to cover total needs.

Chapter 1: The Current State of the Forest Genetic Resources [Tables 3, 4, 5, 6, 7, 8 (8a, 8b), and 9]

Forest ecosystems and vegetation cover in Iran:

1- Euro – Siberian region

1-1- Hyrcanian province (Hyrcanian & Arasbaran forests – North & North-West of Iran)

2- Irano – Turanian region

2-1- Kurdo – Zagrosian province (Zagros forest zone - West of Iran)

2-2- Armeno – Iranian province (Azerbaijan, Albourz, Khorasan – Juniper forests)

2-3- Central Iranian province (Central and East part of Iran - No important forest)

3- Saharo – Sindian region

3-1- Nobo - Sindian or South – Iranian province (South of Iran)

Table 3. Major forest type categories and main tree species. Forest types may be drawn from the categories used in your country or from the list below (Forest Types and Ecological Zone breakdown used in FRA 2000).

Region	Province	Major Forest Types	Area (covered by forest type)	Main species for each type	
				Trees	Other species if applicable
ناحیه رویشی 1- ناحیه رویشی اروپا سبیری - Euro Siberian region	حوزه خزری Hyrcanian province شامل جنگلهای خزر و ارسباران	Hyrcanian forest zone (North of Iran) Temperate contintal forest – TeDc	1 900 000	(1) تپ نواحی مرطوب: <i>Alnus glutinosa</i> + <i>Alnus subcordata</i> + <i>Peterocarpa fraxinifolia</i> با گونه های همراه: <i>Ficus carica</i> , <i>Gleditschia caspica</i> , <i>Zelkova carpinifolia</i> , <i>Smilax excels</i> , <i>Acer velutinum</i>	
		Arasbaran forest zone (North-West of Iran) Temperate contintal forest - TeDc	200	(2) تپ نواحی جلگه ای و دشتی: <i>Quercus castaneifolia</i> + <i>Buxus hyrcanus</i> با گونه های همراه اصلی: <i>Parrotia persica</i> , <i>Albizzia julibrissin</i> , <i>Gleditschia caspica</i> , <i>Diospyrus lotus</i> , <i>Populus caspica</i> , <i>Ficus carica</i> , <i>Zelkova carpinifolia</i> , <i>Acer platanoides</i> , <i>Pterocarya fraxinifolia</i> (3) تپ نواحی دامنه ای و میانیند: <i>Fagus orientalis</i> + <i>Carpinus betulus</i> با گونه های همراه اصلی: <i>Ulmus glabra</i> , <i>Tilia begonifolia</i> , <i>Acer cappadocicum</i> , <i>Acer velutinum</i> , <i>Sorbus</i>	

				<p>torminalis, Acer hyrcanum</p> <p>و گونه های همراه پراکنده:</p> <p>Taxus baccata, Diospyrus lotus, Parrotia persica, Carpinus orientalis, Crataegus spp., Juniperus excelsa</p> <p>(4) تیپ ارتفاعات بالا:</p> <p>Quercus marcanthera+</p> <p>Carpinus orientalis</p> <p>با عناصر همراه:</p> <p>Sorbus aucuparia, Lonicera caucasica, Acer hyrcanum, Evonymus latifolius, Prunus divaricate, Ramnus cathartica, Juniperus communis, Mespilus germanica, Berberis vulgaris</p> <p>*****</p> <p>(Fraxinus excesior, Acer campestre, Fraxinus rotundifolia)</p>	
<p>ناحیه رویشی</p> <p>2- ناحیه رویشی ایرانو - تورانی</p> <p>Irano-Turanian region</p>	<p>1- حوزه رویشی کرد و زاگرس</p> <p>Kurdo-Zagrosian province</p> <p>بر گیرنده جنگلهای زاگرس</p>	<p>Zagros forest zone (West of Iran)</p> <p>Temperate contintal forest - TeDc</p>	<p>3 500 000</p>	<p>تیپ های زاگرس:</p> <p>(1) تیپ بلوط های</p> <p>Quercus libani+</p> <p>Quercus infectoria+</p> <p>Quercus brantii</p> <p>به همراه:</p> <p>Pistacia atlantica, Pyrus Syriaca, Crataegus Meyeri, Fraxinus rotundifolia, Quercus Robur</p> <p>(2) تیپ بلوط / پسته / بادام</p> <p>Quercus brantii</p> <p>Pistacia khinjuk</p>	<p>(Daphne mucronata) (Berberies sp.)</p>
	<p>2- حوزه آرمنو - ایرانین</p> <p>Armeno-Iranian province</p> <p>گیرنده ارتفاعات آذربایجان - البرز و خراسان، در این حوزه در ارتفاعات توده های جنگلی پراکنده ارس دیده</p>				

	<p>می شود.</p> <p>3- حوزه ایران مرکزی Central Iranian province در این حوزه جنگل قابل توجه وجود ندارد.</p>	<p>Irano-Turanian zone (Central and East part of Iran) Temperate steppecontinental forest - TeBSk</p>	<p>5 500 000</p>	<p><i>Pistacia atlantica</i> <i>Acer monsepeessulanum</i> <i>Amygdalus haussknechtii</i> <i>Amygdalus scoparia</i> <i>Amygdalus elaeagnifolia</i></p> <p>(3) تیپ پسته</p> <p><i>Pistacia atlantica</i>+ <i>Amygdalus scoparia</i> <i>Acer monsepeessulanum</i> <i>Amygdalus haussknechtii</i> <i>Amygdalus elaeagnifolia</i> <i>Sageretia Thea</i> ***** (<i>Quercus persica</i>, <i>Celtis caucasica</i>, , <i>Amygdalus lycioides</i>,) (<i>Pistacia mutica</i>,)</p>	
<p>ناحیه رویشی 3- ناحیه رویشی صحاری - سندی Saharo - Sindian region</p>	<p>حوزه نوبو سندین یا جنوب ایران Nobo - Sindian or South-Iranian province در بر گیرنده جنگلهای جنوب ایران</p>	<p>Khalij-Omani zone (South of Iran) Tropical shrubland-TBSh</p>	<p>500 000</p>	<p>تیپ حوزه جنوب ایران: (1) تیپ زیر حوزه غرب: <i>Ziziphus spina-christi</i>+ <i>Ziziphus nummularia</i> <i>Calotropis procera</i> <i>Prosopis koelziana</i> <i>Tecomella undulate</i> <i>Populus euphratica</i> <i>Tamarix spp.</i> <i>Phoenix dactylifera</i></p> <p>(2) تیپ زیر حوزه شرق: <i>Acacia spp.</i>+ <i>Prosopis cineraria</i> (<i>Acacia nitolica</i>, <i>Acacia ehrenbergiana</i>, <i>Acacia tortilis</i>, <i>Acacia oerfota</i>) <i>Avicina marina</i> <i>Rizophora mucronata</i> <i>Leptadenia pyrotechnica</i> <i>Tamarix aphylla</i> <i>Capparis deciduas</i></p>	

				<p><i>Maerua crassifolia</i> <i>Salvadora persica</i> <i>Salvadora oleoides</i> <i>Moringa peregrina</i> <i>Sageretia thea</i></p> <p>تیپ حوزه مرکزی ایران: در این حوزه اصولاً " جنگل به معنی واقعی وجود ندارد و درختان و shrub های پراکنده ای چون:</p> <p><i>Pistacia atlantica</i> <i>Haloxylon ammodendron</i> <i>Haloxylon persicum</i> <i>Tamarix ramosissima</i> <i>Tamarix spp.</i></p> <p>***** (<i>Avicina officinalis</i>, <i>Acacia nubica</i>, <i>Prosopis spicigera</i>)</p>	
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Forest Types and Ecological Zone breakdown used in FRA 2000

EZ Level 1 – Domain		EZ Level 2 - Global Ecological Zone		
Name	Criteria (equivalent to Koppen-Trewartha climatic groups)	Name (reflecting dominant zonal ^a vegetation)	Code	Criteria (approximate equivalent of Koppen-Trewartha climatic types, in combination with vegetation physiognomy, and one orographic zone within each domain)
Tropical	All months without frost: in marine areas over 18°C	Tropical rain forest	TAr	Wet: 0-3 months dry, ^b during winter
		Tropical moist deciduous forest	TAwa	Wet/dry: 3-5 months dry, during winter
		Tropical dry Forest	TAwb	Dry/wet: 5-8 months dry, during winter
		Tropical Shrubland	TBSh	Semi-arid: evaporation > precipitation
		Tropical desert	TBWh	Arid: all months dry
		Tropical mountain systems	TM	Approximately > 1 000 m altitude

3	Zagros (West)								
4	Iran-o-Turanian (Central)								
5	Khalyj-Omani (South)								

Table for list of main plant species in different ecological zones:

R o w	Ecological zones	Family	Genus	Species	Variety	Persian name	Growth form T= tree/ S= shrub	Note
1	Khalyj	Moringaceae	<i>Moringa</i>	<i>Peregrina</i>		گزروغن- گازرخ	T/S	بومی
3	Iran-o-Turanian (Central)	Oleaceae	<i>Olea</i>	<i>europaea</i>		زیتون نخوراکی	T	کاشته شده - بومی
7	ایرانو-تورانی و هیرکانی	Oleaceae	<i>Fraxinus</i>	<i>rotundifolia</i>	<i>rotundifolia</i>	زبان گنجشک- بنو-ون	T	مازندران-گیلان-آذربایجان- کرمانشاه-همدان-کردستان- اراک-لرستان-فارس- کهگیلویه-کمان-خراسان- تهران-سمنان
8	Iran-o-Turanian (Central)	Oleaceae	<i>Fraxinus</i>	<i>rotundifolia</i>	<i>Bormulleri</i>	زبان گنجشک اراک	T	اراک، کهگیلویه و بویر احمد
9	Iran-o-Turanian (Central)	Oleaceae	<i>Fraxinus</i>	<i>rotundifolia</i>	<i>persica</i>	زبان گنجشک ایرانی	S	لرستان، فارس
10	ایرانو-تورانی، هیرکانی	Meliaceae	<i>Melia</i>	<i>Azedarach</i>		زیتون تلخ یا شال پستانه	T	شمال کشور، تهران، یزد، بلوچستان، سمنان، گرمسار، سبزوار و دیگر شهرهای مرکزی
11	Hyrcanian (North)	Fagaceae	<i>Quercus</i>	<i>castanifolia</i>	<i>castanifolia</i>	بلندمازو	T	گرگان-مازندران-گیلان
12	Hyrcanian (North)	Fagaceae	<i>Quercus</i>	<i>macranthera</i>		اوری	T	ارتفاعات شمال-آذربایجان
13	Zagros (West)	Fagaceae	<i>Quercus</i>	<i>Brantii</i>	<i>Brantii</i>	برودار- بلوط ایرانی	T	کردستان
14	Zagros (West)	Fagaceae	<i>Quercus</i>	<i>Brantii</i>	<i>Belangeri</i>	برودار		کردستان-کرمانشاه-لرستان- چهارمحال بختیاری
15	Zagros (West)	Fagaceae	<i>Quercus</i>	<i>Brantii</i>	<i>persica</i>			کرمانشاه-لرستان-چهارمحال بختیاری-فارس
16	Zagros (West)	Fagaceae	<i>Quercus</i>	<i>infectoria</i>	<i>Boissieri</i>		T/S	کردستان-لرستان
17	Zagros (West)	Fagaceae	<i>Quercus</i>	<i>libani</i>		یوول-بلوط لبنانی		آذربایجان غربی-کردستان
18	Zagros	Fagaceae	<i>Quercus</i>	<i>longipes</i>		بلوط اسکو	T	کردستان-اسکو

	(West)							
19	Hyrcanian (North)	Fagaceae	<i>Quercus</i>	<i>petraea</i>	<i>iberica</i>	سفیدمازو	T	شمال ایران - تالش
20	Zagros (West)	Fagaceae	<i>Quercus</i>	<i>robur</i>	<i>pedunculiflora</i>		T	آذربایجان شرقی - کردستان
21	Khalylj-Omani (South)	Boraginaceae	<i>Ehretia</i>	<i>obtusifolia</i>		گونجیر	S	شمال پیشین ایران شهر
22	Iran-o-Turanian (Central)	Sapindaceae	<i>Stocksia</i>	<i>brahuica</i>		کتور	S	جنوب زاهدان - خاش - سراوان - حاجی آباد هرمزگان - شوسف خراسان جنوبی
23	Iran-o-Turanian (Central)	Papilionaceae	<i>Ammodeudron</i>	<i>persicum</i>		گرگ خار	S	خاش، زیرکوه قائن و گزیک
24	Zagros (West)	Rosaceae	<i>Crataegus</i>	<i>atrosanguinea</i>		زالزالک قرمز	T	کردستان
25	هیرکانی، ایرانو-تورانی، زاگرس	Rosaceae	<i>Crataegus</i>	<i>Azarolus</i>	<i>Aronia</i>	زالزالک زرد	T	مازندران - گیلان - کرمانشاه - همدان - اراک - لرستان - چهارمحال - کرمان - فارس - کهگیلویه - تهران
26	هیرکانی، ایرانو-تورانی،	Rosaceae	<i>Crataegus</i>	<i>melanocarpa</i>	<i>elbursensis</i>	سیاه ولیک	S	گرگان - مازندران - گیلان - آذربایجان - اراک - خراسان
27	Iran-o-Turanian (Central)	Rosaceae	<i>Crataegus</i>	<i>Meyeri</i>		زالزالک ارمنستانی	S	ارتفاعات مازندران - آذربایجان - لرستان - کرمان - تهران
28	هیرکانی، ایرانو-تورانی	Rosaceae	<i>Crataegus</i>	<i>microphylla</i>		سرخه ولیک		گرگان - مازندران - گیلان - آذربایجان - کرمانشاه - خراسان
29	Zagros (West)	Rosaceae	<i>Crataegus</i>	<i>orientalis</i>		زالزالک شرقی	T/S	آذربایجان - کردستان
30	Zagros (West)	Rosaceae	<i>Crataegus</i>	<i>persica</i>		زالزالک ایرانی	T	چهارمحال و بختیاری
31	هیرکانی، ایرانو-تورانی، زاگرس	Rosaceae	<i>Crataegus</i>	<i>pontica</i>		زالزالک گرجی		مازندران - لرستان - ایلام - کرمان
32	Iran-o-Turanian (Central)	Rosaceae	<i>Crataegus</i>	<i>x pseudoambigua</i>		زالزالک کپه داغی		خراسان
33	ایرانو-تورانی، زاگرس	Rosaceae	<i>Crataegus</i>	<i>pseudoheterophylla</i>		زالزالک ابروانی	T	گرگان - مازندران - همدان - لرستان - فارس - کهگیلویه - خراسان - تهران - کرج
34	هیرکانی، ایرانو-تورانی	Rosaceae	<i>Crataegus</i>	<i>pseudomelanocarpa</i>		زالزالک ترکمنستانی	T	گرگان - مازندران -
35	Zagros (West)	Rosaceae	<i>Crataegus</i>	<i>sinaica</i>		زالزالک دناپی	S	کهگیلویه و بویراحمد
36	هیرکانی، ایرانو-تورانی	Rosaceae	<i>Crataegus</i>	<i>songarica</i>		زالزالک آسیای مرکزی	T/S	مازندران - خراسان - گرگان
37	Iran-o-Turanian (Central)	Rosaceae	<i>Crataegus</i>	<i>szovitsii</i>		زالزالک قره باغی	T/S	اراک - لرستان

38	Iran-o-Turanian (Central)	Rosaceae	<i>Crataegus</i>	<i>turcomanica</i>		زازالک ترکمنی	T	خراسان
39	Iran-o-Turanian (Central)	Rosaceae	<i>Crataegus</i>	<i>turkestanica</i>		زازالک ترکستانی	S	فارس- خراسان- کرج- سمنان
40	Iran-o-Turanian (Central)	Ulmaceae	<i>Celtis</i>	<i>caucasica</i>		درخت تاه	T	گرگان- مازندران- آذربایجان- کرمانشاه- همدان- اراک- لرستان- چهارمحال- یزد- فارس- خراسان- تهران- کرج
41	Hyricanian (North)	Ulmaceae	<i>Celtis</i>	<i>australis</i>		داغداغان	T	گرگان- مازندران- گیلان
42	ایرانو-تورانی، زاگرس	Ulmaceae	<i>Celtis</i>	<i>glabrata</i>		تایله گرجستانی	T/S	اردبیل- آذربایجان شرقی- لرستان- چهارمحال و بختیاری
43	Zagros (West)	Ulmaceae	<i>Celtis</i>	<i>tournefortii</i>		تایله	S/T	کردستان-
44	Iran-o-Turanian (Central)	Anacardiaceae	<i>Rhus</i>	<i>Coriaria</i>		سماق	S	استانهای مازندران و گیلان (دره هراز، دره رودبار)، همدان، فارس، استان مرکزی، خراسان و در دامنه جنوبی البرز در دماوند، تهران، کرج، قزوین
45	هیرکانی، ایرانو- تورانی، زاگرس	Caesalpiniaceae	<i>Cersis</i>	<i>Siliquastrum</i>		ارغوان	S	گرگان- گیلان- همدان- لرستان- فارس-
46	Hyricanian (North)	Caesalpiniaceae	<i>Cersis</i>	<i>Griffithii</i>		ارغوان افغانی	S	شمال ایران
47	Hyricanian (North)	Betulaceae	<i>Corylus</i>	<i>avellana</i>		فندق	S	اردبیل- مازندران- گیلان
48	هیرکانی، ایرانو- تورانی	Betulaceae	<i>Corylus</i>	<i>Columna</i>		فندق هندی	T	گیلان- یزد
49	Khalyj-Omani (South)	Verbenaceae	<i>Avicennia</i>	<i>officinalis</i>		حرا- تمر	T	چابهار- هرمزگان- بوشهر
50	Iran-o-Turanian (Central)	Aceraceae	<i>Acer</i>	<i>campestre</i>		کرکو- کرب-	S/T	مازندران- گیلان- آذربایجان
51	هیرکانی، ارسباران	Aceraceae	<i>Acer</i>	<i>cappadocicum</i>		شیردار	T	گرگان- مازندران- گیلان- ارسباران
52	Hyricanian (North)	Aceraceae	<i>Acer</i>	<i>hyrcanum</i>		افرای خوری	T	گرگان- مازندران- گیلان
53	Zagros (West)	Aceraceae	<i>Acer</i>	<i>monspessulanum</i>	<i>assyriacum</i>	کیکم	S/T	کردستان- کرمانشاه
54	Hyricanian (North)	Aceraceae	<i>Acer</i>	<i>monspessulanum</i>	<i>ibericum</i>	سیاه کرکو	S	شمال ایران
55	Zagros (West)	Aceraceae	<i>Acer</i>	<i>monspessulanum</i>	<i>cinerascens</i>	کیکم شیرازی	S/T	کرمانشاه- اراک- اصفهان- لرستان- چهارمحال- کهگیلویه- فارس- بوشهر-
56	زاگرس، ایرانو- تورانی	Aceraceae	<i>Acer</i>	<i>monspessulanum</i>	<i>persicum</i>	کیکم ایرانی	S	فارس- کرمان-
57	Iran-o-	Aceraceae	<i>Acer</i>	<i>monspessulanum</i>	<i>turcomanicum</i>	کیکم		گرگان- خراسان- سمنان

	Turanian (Central)					ترکمنی		
58	Hyricanian (North)	Aceraceae	Acer	platanoides		افرای چناری	T	گرگان - مازندران
59	Hyricanian (North)	Aceraceae	Acer	velutinum	velutinum	افرا پلت	T	مازندران - گیلان
60	Hyricanian (North)	Aceraceae	Acer	velutinum	glabrescens	افرا پلت	T	گرگان - مازندران - گیلان
61	هیرکانی، ایرانو-تورانی	Moraceae	Ficus	Carica	Carica	انجیر خوراکی	T/S	استانهای شمالی، خراسان، سمنان، تهران، آذربایجان، اراک، لرستان و فارس
62	Iran-o-Turanian (Central)	Moraceae	Ficus	Carica	Rupestris	انجیر خوراکی صخره‌ای	S	آذربایجان، کردستان، همدان، کرمانشاه، اصفهان، اراک، لرستان و خوزستان
63	Iran-o-Turanian (Central)	Moraceae	Ficus	johannis	johannis	انجیر وحشی		تنگ سرخه، تفتان شمال زاهدان ارتفاعات شمال عسلویه، حوالی رودخانه مند، شمال هرمزگان، شمال خوزستان، فارس، کهگیلویه، کرمان، تفتان، یزد و خراسان
64	Iran-o-Turanian (Central)	Moraceae	Ficus	johannis	afghanistica	انجیر وحشی افغانی	S/T	اصفهان - کرمان - خراسان
65	Iran-o-Turanian (Central)	Moraceae	Ficus	palnata	virgata	انجیر وحشی مکرانی	S/T	سراوان بلوچستان
66	Iran-o-Turanian (Central)	Ulmaceae	Ulmus	Boissietiri		نارون برگ ریز	T	کرمانشاه - کرمان
67	Hyricanian (North)	Ulmaceae	Ulmus	glabra		ملج	T	گرگان - مازندران - گیلان - آذربایجان
68	Iran-o-Turanian (Central)	Ulmaceae	Ulmus	minor		اوجا	T	ارتفاعات شمال، آذربایجان - اراک - اردبیل - چهارمحال - یزد - خراسان - تهران
69	هیرکانی، ایرانو-تورانی	Ulmaceae	Ulmus	umbraculifera		نارون چتری	T	مازندران - کرمانشاه - اصفهان، تهران و کرج و قزوین (کاشته شده)
70	Khalyj	Salvadoraceae	Salvadora	oleoides		پیر	T/S	جنوب شرق ایران
71	Khalyj	Salvadoraceae	Salvadora	persica		درخت مسواک	S	هرمزگان - چابهار
72	ایرانو-تورانی، هیرکانی	Betulaceae	Betula	pendula		توس - غان	T	تهران - ارتفاعات مازندران - سمنان
73	ایرانو-تورانی، هیرکانی	Papilionaceae	Colutea	Buhsei		دغدغک البرزی	S	در ارتفاعات، شاه پسند، جنگل گلستان، دره هراز، فولاد محله سمنان، کندوان جنوب خلیخال، هزارمسجد، کوه کپه داغ، ارنگه، گچسر، ارتفاعات شمال سمنان
74	ارسیباران	Papilionaceae	Colutea	silicica		دغدغک	S	آذربایجان - ارسباران

		ceae				آسیای صغیری		
75	Iran-o- Turanian (Central)	Papilionaceae	<i>Colutea</i>	<i>Gifana</i>		دغدغک گیفانی	S	خراسان
76	ایرانو- تورانی، هیرکانی	Papilionaceae	<i>Colutea</i>	<i>gracilis</i>		دغدغک ترکمستانی	S	گرگان- کرمان
77	ایرانو- تورانی، زاگرس	Papilionaceae	<i>Colutea</i>	<i>persica</i>		دغدغک	S	فارس- کرمان
78	Hyrcanian (North)	Papilionaceae	<i>Colutea</i>	<i>porphyrogramma</i>		دغدغک رگه ارغوانی	S	گرگان- خراسان- سمنان
79	Iran-o- Turanian (Central)	Papilionaceae	<i>Colutea</i>	<i>uniflora</i>		دغدغک قزوینی	S	گیلان- قزوین- بین قزوین و رشت(کوه خراسان)
80	Khalyj- Omani (South)	Rhizophoraceae	<i>Rhizophora</i>	<i>mucronata</i>		چندل	T	هرمزگان
81	Zagros (West)	Rosaceae	<i>Amygdalus</i>	<i>Arabica</i>		بادام طاووسی	S	غرب
82	Iran-o- Turanian (Central)	Rosaceae	<i>Amygdalus</i>	<i>brahuica</i>		بادام تفتانی	S	بلوچستان - خراسان
83	ایرانو- تورانی، زاگرس	Rosaceae	<i>Amygdalus</i>	<i>carduchorum</i>		چغالک	S	غرب - زنجان
84	ایرانو- تورانی، زاگرس	Rosaceae	<i>Amygdalus</i>	<i>communis</i>		بادام شیرین	S	نواحی مرکزی- شمالغرب
85	Iran-o- Turanian (Central)	Rosaceae	<i>Amygdalus</i>	<i>eburnea</i>		بادام خاکستری	S	غرب-مرکز-جنوبشرق
86	ایرانو- تورانی، زاگرس	Rosaceae	<i>Amygdalus</i>	<i>elaeagnifolia</i>		بادام کرمانی	S	کرمان- فارس- لرستان
87	Zagros (West)	Rosaceae	<i>Amygdalus</i>	<i>erioclada</i>		بادام پرسپولیسی	S	فارس- لرستان
88	Iran-o- Turanian (Central)	Rosaceae	<i>Amygdalus</i>	<i>fenzliana</i>		بادام قره باغی	S	آذربایجان
89	Zagros (West)	Rosaceae	<i>Amygdalus</i>	<i>glauca</i>		بادام شیرازی	S	فارس
90	Zagros (West)	Rosaceae	<i>Amygdalus</i>	<i>hausknechtii</i>		ارچنگ	S	زاگرس
91	Zagros (West)	Rosaceae	<i>Amygdalus</i>	<i>korschinskii</i>			S	غرب
92	ایرانو- تورانی، زاگرس	Rosaceae	<i>Amygdalus</i>	<i>kotschi</i>		بادام کردستانی	S	غرب- شمالغرب
93	ایرانو- تورانی، زاگرس	Rosaceae	<i>Amygdalus</i>	<i>lycioides</i>		تنگرس	S	غرب- مرکز - شمالغرب
94	Zagros (West)	Rosaceae	<i>Amygdalus</i>	<i>orientalis</i>		بادام شرقی	S	غرب
95	Zagros	Rosaceae	<i>Amygdalus</i>	<i>pabotti</i>			S	غرب

	(West)							
96	Iran-o-Turanian (Central)	Rosaceae	<i>Amygdalus</i>	<i>x podoperea</i>		بادام خورموجی	S	بوشهر (خورموج)
97	ایرانو-تورانی، زاگرس	Rosaceae	<i>Amygdalus</i>	<i>reticulate</i>		بادام مشبک	S	فارس
98	ایرانو-تورانی، زاگرس	Rosaceae	<i>Amygdalus</i>	<i>scoparia</i>		ارژن	S	مرکز-جنوب-شرق-غرب
99	Iran-o-Turanian (Central)	Rosaceae	<i>Amygdalus</i>	<i>spinosissima</i>	<i>turcomanica</i>	بادام پرخار	S	خراسان
100	ایرانو-تورانی، زاگرس	Rosaceae	<i>Amygdalus</i>	<i>trichamygdalus</i>		بادام مخملی	S	شمالغرب
101	Iran-o-Turanian (Central)	Rosaceae	<i>Amygdalus</i>	<i>wendelboi</i>		ارچن	S	گنو-تفتان
102	Iran-o-Turanian (Central)	Rosaceae	<i>Amygdalus</i>	<i>urumiensis</i>		بادام ارومیه‌ای	S	آذربایجان غربی
103	Khalyj-Omani (South)	<i>Mimosaceae</i>	<i>Acacia</i>	<i>ehrenbergiana</i>		چگرد	S	جنوب بلوچستان-هرمزگان-بوشهر
104	Khalyj	<i>Mimosaceae</i>	<i>Acacia</i>	<i>nilotica</i>	<i>nilotica</i>	چش	T	کنگان بوشهر
105	Khalyj	<i>Mimosaceae</i>	<i>Acacia</i>	<i>nilotica</i>	<i>indica</i>	کرت	T	هرمزگان-بوشهر
106	Khalyj	<i>Mimosaceae</i>	<i>Acacia</i>	<i>nilotica</i>	<i>astringens</i>	کرت	T	بوشهر-هرمزگان(قشم)
107	Khalyj	<i>Mimosaceae</i>	<i>Acacia</i>	<i>oerfota</i>		تج-مغیل	S	هرمزگان
108	Khalyj	<i>Mimosaceae</i>	<i>Acacia</i>	<i>Sp.</i>		آکاسیای سنبله‌ای	S	حاشیه مند در بوشهر
109	Khalyj	<i>Mimosaceae</i>	<i>Acacia</i>	<i>tortilis</i>		آکاسیای چتری	T	هرمزگان
110	Khalyj	<i>Mimosaceae</i>	<i>Prosopis</i>	<i>cineraria</i>		کهور درختی	T	بلوچستان-هرمزگان-بوشهر
111	Khalyj	<i>Mimosaceae</i>	<i>Prosopis</i>	<i>Koelziana</i>	<i>Puberula</i>	کهور ای شrub	S	بمپور-هرمزگان-کنگان-بم-کهنوج
112	Khalyj	<i>Mimosaceae</i>	<i>Prosopis</i>	<i>Koelziana</i>	<i>Koelziana</i>	کهور ای شrub	S	بوشهر-هرمزگان-بلوچستان-کرمان(حوالی بم-فهرج-جیرفت)
113	Hyrcanian (North)	<i>Mimosaceae</i>	<i>Albizzia</i>	<i>julibrissina</i>		شب خسب	T	گرگان-مازندران گیلان
114	Khalyj	<i>Mimosaceae</i>	<i>Albizzia</i>	<i>lebbek</i>		برهان	T	خوزستان0 بوشهر-هرمزگان-چابهار-جنوب فارس
115	Khalyj	Capparidaceae	<i>Capparis</i>	<i>decidua</i>		کلیر	S/T	بلوچستان-هرمزگان
116	Khalyj	Capparidaceae	<i>Capparis</i>	<i>mucronifolia</i>		کور ای شrub	S	هرمزگان-بلوچستان
117	Khalyj	Capparidaceae	<i>Capparis</i>	<i>Cartilaginea</i>		کور آویز	S	بوشهر-بلوچستان-هرمزگان
118	Khalyj	Asclepiadaceae	<i>Calotropis</i>	<i>procera</i>		استبرق-کرک	S	بلوچستان-خوزستان-هرمزگان

119	Khalyj-Omani (South)	palmaceae	<i>namorohops</i>	Ritchieana		داز	S	بلوچستان
120	خلیج - عمانی، ایرانو-تورانی	Solanaceae	<i>Lycium</i>	depressum	<i>angustifolium</i>	دیو خار مینایی -	S	آذربایجان- خوزستان- کرمان- فارس - - هرمزگان- بلوچستان- خراسان
121	Iran-o-Turanian (Central)	Solanaceae	<i>Lycium</i>	depressum	<i>depressum</i>	دیو خار ترکمنی	S	خراسان- گیلان، آذربایجان- فارس - یزد
122	Khalyj-Omani (South)	Solanaceae	<i>Lycium</i>	Edgeworthii		دیو خار بلوچستانی	S	بلوچستان- هرمزگان
123	Iran-o-Turanian (Central)	Solanaceae	<i>Lycium</i>	Kopetdaghi		دیو خار خراسانی	S	خراسان- تران
124	Iran-o-Turanian (Central)	Solanaceae	<i>Lycium</i>	ruthenicum		گرگ تیغ	S	آذربایجان- زنجان- همدان- سیستان - خراسان- تهران- قزوین- سمنان
125	Khalyj-Omani (South)	Solanaceae	<i>Lycium</i>	Schawii		زیروک	S	خوزستان- بوشهر- هرمزگان- بلوچستان
126	Iran-o-Turanian (Central)	Solanaceae	<i>Lycium</i>	makranicum		دیو خار مکرانی	S	شمال و مرکز سیستان و بلوچستان
127	Khalyj-Omani (South)	Rhamnaceae	<i>Ziziphus</i>	Aucheri		کنار بوشهری	T	بوشهر
128	Iran-o-Turanian (Central)	Rhamnaceae	<i>Ziziphus</i>	Jujuba		عناّب	T	اصفهان- لرستان- خراسان
129	Khalyj	Rhamnaceae	<i>Ziziphus</i>	'Lotus		کنار کازرونی	S	کازرون
130	Khalyj	Rhamnaceae	<i>Ziziphus</i>	Mauritiana		کنار پیوندی	S	هرمزگان- بلوچستان
131	خلیج - عمانی، ایرانو-تورانی	Rhamnaceae	<i>Ziziphus</i>	nummularia		رملیک	S	ایلام- خوزستان- لرستان- فارس- بوشهر- جنوب کرمان- بلوچستان- هرمزگان
132	Khalyj-Omani (South)	Rhamnaceae	<i>Ziziphus</i>	Spinachirsti		کنار	T	استانهای جنوبی - جنوب کرمان- جنوب فارس
133	Khalyj-Omani (South)	Menispermaceae	<i>Cocculus</i>	pendules		زامور- ایشک	S	فارس- بوشهر- هرمزگان
134	Iran-o-Turanian (Central)	Ephedraceae	<i>Ephedra</i>	distachya		ارمک دوردیفه	S	گیلان(حاشیه سفیدرود)- آذربایجان-
135	Khalyj-Omani (South)	Ephedraceae	<i>Ephedra</i>	foliata		ارمک رونده	S	استانهای جنوبی
136	Iran-o-Turanian (Central)	Ephedraceae	<i>Ephedra</i>	intermedia		ارمک- ریش بز	S	گیلان- اراک- اصفهان- یزد- تهران- کرمان- کرمانشاه- شمال بلوچستان- خراسان- سمنان
137	Iran-o-Turanian (Central)	Ephedraceae	<i>Ephedra</i>	laristanica		ارمک لارستانی	S	فارس- شمال هرمزگان
138	Iran-o-	Ephedraceae	<i>Ephedra</i>	major	<i>major</i>	ریش بز	S	آذربایجان شرقی و غربی

	Turanian (Central)							
139	Iran-o-Turanian (Central)	Ephedraceae	<i>Ephedra</i>	major	<i>procera</i>	ریش یز	S	آذربایجان شرقی و غربی
140	ایرانو-تورانی، خلیج عمانی	Ephedraceae	<i>Ephedra</i>	pachyclada		افدرا	S	یزد- فارس- هرمزگان- کرمان-
141	Iran-o-Turanian (Central)	Ephedraceae	<i>Ephedra</i>	procera		ارمک	S	گیلان- گرگان- آذربایجان- همدان- فارس- بوشهر- خراسان- تهران- قزوین
142	Iran-o-Turanian (Central)	Ephedraceae	<i>Ephedra</i>	Sacrocarpa		ارمک گوشتی	S	اصفهان- سمنان- تهران- ساوه- کرج- تهران هشتگرد - قم
143	Iran-o-Turanian (Central)	Ephedraceae	<i>Ephedra</i>	strobilacea		ارمک بیابانی	S	اصفهان- فارس- کرمان- یزد- شمال بلوچستان- سمنان- خراسان- تهران
144	Khalyj	Bignoniaceae	<i>Tecomella</i>	undulata		سمنگ- انارشیطان	T	بوشهر- هرمزگان- فارس(جنوب) - خوزستان- جیرفت
145	Khalyj	Boraginaceae	<i>Cordia</i>	crenata		لیم	S	جنوب ایران(کاشته شده)
146	Khalyj	Boraginaceae	<i>Cordia</i>	dichotoma			T	خوزستان- هرمزگان(کاشته شده)
147	Khalyj	Boraginaceae	<i>Cordia</i>	myxa		سه پستان	T	جنوب ایران(کاشته شده)
148	Iran-o-Turanian (Central)	Papilionaceae	<i>Halimodendron</i>	halodendron		اشک	S	آذربایجان- همدان- اصفهان- چهارمحال- فارس- خراسان- تهران- قزوین- دماون- سمنان
149	Khalyj	Euphorbiaceae	<i>Euphorbia</i>	larica		برخ	S	هرمزگان-
150	Khalyj	Euphorbiaceae	<i>Euphorbia</i>	tirucalli		بیدار	S	بلوچستان جنوبی(کاشته شده)
151	Khalyj	Sapindaceae	<i>Dodonaea</i>	viscosa		ناترک	S	بوشهر- هرمزگان- بلوچستان
152	Zagros (West)	Thymelaeaceae	<i>Daphne</i>	mucronata		دافنه- خیش	S	زاگرس
153	خلیج عمانی، ایرانو-تورانی	Asclepiadaceae	<i>Periploca</i>	aphylla	<i>aphylla</i>	گیشدر	S	ایلام- خوزستان- بوشهر- فارس- هرمزگان- بلوچستان- خراسان
154	Khalyj-Omani (South)	Asclepiadaceae	<i>Periploca</i>	aphylla	<i>laxiflora</i>	گیشدر	S	بلوچستان

Main plant species of South Khorasan province (web site of General directory of the province):

Table of main plant species of South Khorasan province

Scientific name	Family	Growth form	Persian or local name
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<i>Artemisia sieberi</i>	<i>Compositae</i>	shrub	درمنه دشتی
<i>Artemisia aucheri</i>	<i>Compositae</i>	shrub	درمنه کوهی
<i>Artemisia diffusa</i>	<i>Compositae</i>	shrub	درمنه میشی
<i>Stipa parviflora</i>	<i>Gramineae</i>	grass	دم اسبی
<i>Tamarix serotina</i>	<i>Tamaricaceae</i>	shrub	گز
<i>Launaea acanthodes</i>	<i>Compositae</i>	grass	چرخه
<i>Erysimum crassicaule</i>	<i>Cruciferae</i>	grass	خاکشیر
<i>Melica jacyemontii</i>	<i>Gramineae</i>	grass	ملیکا
<i>Cleome chorassanica</i>	<i>Capparidiaceae</i>	grass	علف مار
<i>Salvia tebesana</i>	<i>Labiatae</i>	shrub	پونه
<i>Euphorbia densa</i>	<i>Euphorbiaceae</i>	grass	شیرسگ
<i>Ziziphora clinopodoides</i>	<i>Labiatae</i>	grass	کاکوتی کوهی
<i>Atraphaxis spinosa</i>	<i>Polygonaceae</i>	shrub	کاروانکش
<i>Convolvulus leiocalycinus</i>	<i>Convolvaceae</i>	shrub	پیچک
<i>Salvia macrosiphon</i>	<i>Labiatae</i>	grass	مریم گلی
<i>Rheum ribes</i>	<i>Polygonaceae</i>	grass	ریواس
<i>Cirsium arvense</i>	<i>Compositae</i>	grass	کنگر صحرائی
<i>Heliotropium chorassanicum</i>	<i>Boraginaceae</i>	grass	آفتاب پرست
<i>Polygonum afghanium</i>	<i>Polygonaceae</i>	grass	علف هفت بند
<i>Prosopis farcta</i>	<i>Mimosaceae</i>	shrub	جغجغه
<i>Allium rubellum</i>	<i>Liliaceae</i>	grass	پیاز
<i>Pteropium aucheri</i>	<i>Polygonaceae</i>	shrub	پرند
<i>Acantholimon bracteatum</i>	<i>Plumbaginaceae</i>	shrub	چوبک
<i>Aeliema subaphylla</i>	<i>Chenopodiaceae</i>	shrub	عجوه
<i>Artemisia herba alba</i>	<i>Compositae</i>	shrub	درمنه

Table of main plant species of South Khorasan province

Scientific name	Family	Growth form	Persian or local name
<i>Pistacia atlantica</i>	<i>Anacardinaceae</i>	T	بنه

<i>Astragalus spp.</i>	<i>Papilionaceae</i>	shrub	گون
<i>Amygdalus lycioides</i>	<i>Rosaceae</i>	shrub	زیروک- تنگرس
<i>Dorema ammoniacum</i>	<i>Umbeliiferae</i>	grass	اشترک- کندل
<i>Ferula gummosa</i>	<i>Umbeliiferae</i>	grass	باریجه
<i>Alhagi persarum</i>	<i>Papilionaceae</i>	shrub	خارشتر
<i>Peganum harmala</i>	<i>Zygophyllaceae</i>	grass	اسپند
<i>Achillea eriophora</i>	<i>Compositae</i>	grass	بومادران
<i>Atriplex . sp.</i>	<i>Chenopodiaceae</i>	forb	اسفناج وحشی
<i>Capparis spinosa</i>	<i>Capparidaceae</i>	grass	علف مار
<i>Salvia tebesana</i>	<i>Labiatae</i>	shrub	پونه
<i>Euphorbia densa</i>	<i>Euphorbiaceae</i>	grass	شیرسگ
<i>Ziziphora clinopodoides</i>	<i>Labiatae</i>	grass	کاکوتی کوهی
<i>Eryngium Bungei</i>	<i>Compositae</i>	grass	زول
<i>Rubia florida</i>	<i>Rubiaceae</i>	grass	روناس صخره‌زی
<i>Tulipa micheliana</i>	<i>Liliaceae</i>	grass	لاله
<i>Echinops villosissimus</i>	<i>Compositae</i>	grass	شکر تیغال
<i>Convolvulus</i>	<i>Convolvulaceae</i>	forb	پیچک
<i>Bromus danthoniae</i>	<i>Poaceae</i>	grass	برموس
<i>Bromus tectorum</i>	<i>Poaceae</i>	grass	برموس
<i>Ephedra . sp</i>	<i>Ephedra . sp</i>	shrub	افدرا
<i>Ferula gummosa</i>	<i>Ferula gummosa</i>	forb	کما
<i>Goebelia alopecuroides</i>	<i>Leguminasae</i>	forb	تلخ بیان
<i>Gundelia spp</i>	<i>Compositae</i>	forb	کنگر
<i>Haloxylon. sp</i>	<i>Chenopodiaceae</i>	shrub	تاغ

Table of main plant species of South Khorasan province

Scientific name	Family	Growth form	Persian or local name
<i>Malva spp</i>	<i>Malvaceae</i>	forb	پنیرک
<i>Hyssopus officinalis</i>	<i>Labiatae</i>	forb	گوش بره

<i>Hulthemia persica</i>	<i>Rosaceae</i>	shrub	ورگ
<i>Stipagrostis plumosa</i>	<i>Poaceae</i>	grass	سبد
<i>Allium hirtifolium</i>	<i>Liliaceae</i>	grass	پیاز
<i>Teucrium scordium</i>	<i>Labiataeae</i>	grass	کل پوره
<i>Juncus spp</i>	<i>Juncaceae</i>	grass like	سازو
<i>Zygophllum . sp</i>	<i>Zygophyllaceae</i>	shrub	قیچ
<i>Lactuca orientalis</i>	<i>Compositae</i>	forb	کاهوی وحشی
<i>Stipabarbata</i>	<i>Poaceae</i>	grass	استپی ری شدار
<i>Taraxacum . sp</i>	<i>Compositae</i>	shrub	گل قاصدک
<i>Citrullus colocynthis</i>	<i>Cucurbitaceae</i>	grass	هندوانه ابو جهل
<i>Centaurea virgata</i>	<i>Fabaceae</i>	forb	گل گندم
<i>Stipagrostis pangens</i>	<i>Poaceae</i>	grass	سیف
<i>Hordeum glaucm</i>	<i>Poaceae</i>	grass	جو موشی
<i>Aleuopus littoralis</i>	<i>Poaceae</i>	grass	علف شور
<i>Boissiera sqarosa</i>	<i>Poaceae</i>	grass	دم گربه ای
<i>Bromus tectorum</i>	<i>Poaceae</i>	grass	علف پشمکی
<i>Atriplex leucoelada</i>	<i>Chenopdiaceae</i>	forb	سلمه
<i>Caratocarpus arenarius</i>	<i>Chenopdiaceae</i>	shrub	بادبر
<i>Sophora pachycarpa</i>	<i>Fabaceae</i>	forb	تلخه بیان
<i>Salsola tomentosa</i>	<i>Chenopdiaceae</i>	forb	علف شور
<i>Seidlitzia rosmorinus</i>	<i>Chenopdiaceae</i>	shrub	اشنان
<i>Salvia lerifolia</i>	<i>Labiatae</i>	forb	نوروزک
<i>Iris songarica</i>	<i>Iridaceae</i>	forb	زنبق

Table of main plant species of South Khorasan province

Scientific name	Family	Growth form	Persian or local name
<i>Boniumpersicum</i>	<i>Umbeliferea</i>	grass	زیره
<i>Ficus johannis</i>	<i>Moraceae</i>	shrub	انجیر
<i>Hordeum glaucum</i>	<i>Poaceae</i>	grass	جو وحشی

<i>Verbascum sp.</i>	<i>Scrophulariaceae</i>	grass	گل ماهور
<i>Reseda luteola</i>	<i>Resedaceae</i>	grass	ورث
<i>Hammada salicornica</i>	<i>Chenopodiaceae</i>	shrub	رمس
<i>Scorzonera mucida</i>	<i>Compositae</i>	grass	شنگ
<i>Alyssum sp.</i>	<i>Cruciferae</i>	grass	قدومه
<i>Hultemia persica</i>	<i>Rosaceae</i>	shrub	نسترن
<i>Rheum ribes</i>	<i>Polygonaceae</i>	grass	ریواس - ریوآش
<i>Oligochaeta minima</i>	<i>Asteraceae</i>	grass	سازو
<i>Scrophularia leuoclada</i>	<i>Scrophulariaceae</i>	shrub	مخلصه
<i>Thymus vulgaris</i>	<i>Labiataeae</i>	grass	آویشن
	<i>Zygophyllace</i>	grass	خارخسک

Plant diversity in Gisum forest preservation (protected area) in Talesh (Guilan province) (Ravanbakhsh et al. 2008):

Table of Trees (woody species) in Talesh:

Row	Scientific name	Family	Persian name
1	<i>Acer velutinum</i> Boiss	<i>Aceraceae</i>	سیاه پلت
2	<i>Acer cappadocicum</i> Gled	<i>Aceraceae</i>	افرای شیر دار
3	<i>Albizzia julibrissin</i> Durazz	<i>Mimosaceae</i>	گل ابریشم
4	<i>Alnus glutinosa</i> (L.)Gaerth	<i>Betulaceae</i>	توسکای قشلاقی
5	<i>Alnus subcordata</i> C.A.Mey	<i>Betulaceae</i>	توسکای بیلاقی
6	<i>Buxcus hyrcana</i> Pajark	<i>Buxaceae</i>	شمشاد جنگلی
7	<i>Carpinus betulus</i> L.var <i>Betulus</i>	<i>Corylaceae</i>	ممرز
8	<i>Crataegus microphyla</i> C.koch	<i>Rosaceae</i>	سرخه ولیک
9	<i>Diospyros lotus</i> L	<i>Ebnaceae</i>	خرمندی
10	<i>Ficus carica</i>	<i>Moraceae</i>	انجیر
11	<i>Fraxinus excelsior</i> L	<i>Oleaceae</i>	ون
12	<i>Gleditschia caspica</i> Desf.	<i>Cesalpinaceae</i>	لیلکی

13	<i>Mespilus germanica</i> L	<i>Betulaceae</i>	ازگیل
14	<i>Morus alba</i> L	<i>Moraceae</i>	توت سفید
15	<i>Parrotia persica</i> (DC.)C.A.Mey	<i>Hammamelidaceae</i>	انجیلی
16	<i>Populus nigra</i> L	<i>Salicaceae</i>	تبریزی
17	<i>Pterocaria fraxinifolia</i> (Lam.) pach	<i>Juglandaceae</i>	لرگ
18	<i>Prunus divaricata</i> Ledeb	<i>Rosaceae</i>	آلوچه
19	<i>Quercus castaneaefolia</i> C.A.Mey	<i>Fagaceae</i>	بلند مازو
20	<i>Ulmus minor</i> Miller	<i>Betulaceae</i>	اوجا
21	<i>Zelkova caprinifolia</i>	<i>Betulaceae</i>	آزاد
22			

Plant diversity in Gisum forest preservation (protected area) in Talesh (Guilan province) (Ravanbakhsh et al. 2008):

Table of Forb and grasses (non-woody species) in Talesh:

Row	Scientific name	Family	Persian name
1	<i>Ilex Aquifolium</i> L	<i>Aquifoliaceae</i>	خاس
2	<i>Hedera pastuchovii</i> Woron ex Grossh	<i>Araliaceae</i>	داردوست
3	<i>Dryopteris borrei</i> Adens	<i>Aspidiaceae</i>	سرخس نر
4	<i>Polysticum branunii</i> (Spenner)Fee	<i>Aspidiaceae</i>	سرخس مقدس جنگلی
5	<i>Polysticum meyerii</i> Roth	<i>Aspidiaceae</i>	سرخس مقدس آلمانی
6	<i>Phyllitis Scolopendrium</i> L.(newm	<i>Aspleniaceae</i>	زنگی دارو
7	<i>Artimista annua</i> L	<i>Asteraceae</i>	گند واش
8	<i>Conyza Canadensis</i> (L.)Cronq	<i>Asteraceae</i>	پیر بهارک کانادائی
9	<i>Carpesium cernuum</i> L	<i>Asteraceae</i>	-
10	<i>Dichrocephala integrifolia</i> D.C	<i>Asteraceae</i>	-
11	<i>Eclipta alba</i> (L.)Hask	<i>Asteraceae</i>	مستور سفید
12	<i>Athyrium filix-femina</i> (L.)Roth	<i>Athyriaceae</i>	سرخس ماده

13	<i>Cardamine uliginosa</i> M.B	<i>Brassicaceae</i>	تره تیزک باتلاقی
14	<i>Symphyandra odontosa</i> A.DC	<i>Campanulaceae</i>	-
15	<i>Sambucus Ebulus</i> L	<i>Carpifoliaceae</i>	پلم (آقطی)
16	<i>Stellaria media</i> (L.)Cyr	<i>Cryophylaceae</i>	دانه قناری
17	<i>Carex divulsa</i> L	<i>Cyperaceae</i>	جگن
18	<i>Carex sylvatica</i> L	<i>Cyperaceae</i>	جگن
19	<i>Acalypha australis</i> L	<i>Ephorbiaceae</i>	آکالیفا
20	<i>Euphorbia squamosa</i> Willd	<i>Ephorbiaceae</i>	فرفیون فلس دار
21	<i>Euphorbia turcomanica</i> Boiss	<i>Ephorbiaceae</i>	فرفیون ترکمنی
22	<i>Equisetum ramosisum</i> Desf	<i>Equisetaceae</i>	دم اسب پر شاخه
23	<i>Geranium lucidum</i> L	<i>Graniaceae</i>	سوزن چوپان درخشان
24	<i>Hypericum helianthemoides</i> (Spach)Boiss	<i>Hypericaceae</i>	گل راعی آفتابی
25	<i>Hypericum perforatum</i> L	<i>Hypericaceae</i>	گل راعی
26	<i>Calaminta umbrosum</i> (MB)	<i>Labiataeae</i>	تره تیزک باتلاقی
27	<i>Lycopus europaes</i> L	<i>Labiataeae</i>	پای گرگ
28	<i>Mentha aquatica</i> L	<i>Labiataeae</i>	پونه آبی
29	<i>Danae racemosa</i> (L.)Moench	<i>Liliaceae</i>	همیشک
30	<i>Ruscus hyrcanus</i> Woron	<i>Liliaceae</i>	کوله خاس
31	<i>Smilax excelsa</i> L.	<i>Liliaceae</i>	ازملک
32	<i>Circaea lutetiana</i> L	<i>Onograceae</i>	عشرق
33	<i>Ludwigia palustris</i> (L.)Elliott	<i>Onograceae</i>	خرقه آبی
34	<i>Oxalis corniculata</i> L	<i>Oxalidaceae</i>	شبدر ترشک
35	<i>Plantago major</i> L	<i>Plantaginaceae</i>	بارهنگ کبیر
36	<i>Cynodon dactylon</i> L	<i>Poaceae</i>	مرغ
37	<i>Digitaria sanguinalis</i> (L.)Scop	<i>Poaceae</i>	پنجه کلاغی

38	<i>Oplismenus undolatifolius</i> (Ard.)P.Beauv.	Poaceae	ارزن جنگلی
39	<i>Oplismenus compositum</i> L. P.Beauv	Poaceae	ارزن جنگلی
40	<i>Polygonum Hydropiper</i> L	Polygonaceae	علف هفت بند
41	<i>Polygonum mite</i> Schrank	Polygonaceae	علف هفت بند نرم
42	<i>Rumex Acetosa</i> L	Polygonaceae	ترشک باغی
43	<i>Polypodium vulgare</i> L.	Polypodiaceae	بسفایج
44	<i>Pteris ceritia</i> L	Pteridiaceae	سرخس دو پایه
45	<i>Potentilla reptans</i> L	Rosaceae	پنجه برگ رونده
46	<i>Rubus hyrcanus</i> Juz	Rosaceae	تمشک خزری
47	<i>Galium fumifusum</i> L	Rubiaceae	شیر پنیر
48	<i>Atropa Belladonna</i> L	Solanaceae	شابیژک
49	<i>Solanum nigrum</i> L.	Solanaceae	تاجریزی سیاه
50	<i>Thelypteris palustris</i> Schott	Thelypteridaceae	سرخس باتلاقی
51	<i>Urtica dioica</i> L .	Urticaceae	گزنه دو پایه
52	<i>Urtica urens</i> L.	Urticaceae	گزنه سگ
53	<i>Viola odorata</i> L.	Violaceae	بنفشه معطر
54	<i>Galium setaceum</i>	Rubiaceae	شیر پنیر
55	<i>Juncus rigidus</i> Desf	Juncaceae	سازو

Guilan province's tree and shrub species (Research project, (1382-1387) 2004-2009, Panahpour):

Row	Scientific name	Family	Persian name	Local name
1	<i>Acer campestre</i> L.	Aceraceae	کرب*	ککم
2	<i>Acer cappadocicum</i> Gled.	Aceraceae	شیردار*	کیکم
3	<i>Acer hyrcanum</i> Fisch.&C.A.Mey	Aceraceae	سفید کرکو*	افرای خزری
4	<i>Acer monspessulanum</i> L.subsp.ibericum(M.B.)Yaltr	Aceraceae	سیاه کرکو*	کیکم قفقازی

	ik			
5	<i>Acer platanoides</i> L.	<i>Aceraceae</i>	کرکف*	افراي چناري
6	<i>Acer velutinum</i> Boiss.var.velutinum	<i>Aceraceae</i>	پلت*	بسکام
7	<i>Acer velutinum</i> Boiss.var.glabresces	<i>Aceraceae</i>	پلت*	بسکام
8	<i>Albizzia julibrissin</i> Durazz.	<i>Mimosaceae</i>	گل ابريشم**	کشکر شب خسب
9	<i>Alnus glutinosa</i> (L.)Gaertn.subsp.barbata	<i>Betulaceae</i>	توسکاي قشلاقي*	رزدار،توسه دار
10	<i>Alnus subcordata</i> C.A.Mey	<i>Betulaceae</i>	توسکاي بيلاقي*	رزدار
11	<i>Amygdalus lycioides</i> Spach var.horrida	<i>Rosaceae</i>	بادام کوهي**	تنگرس
12	<i>Amygdalus lycioides</i> Spach var.lycioides	<i>Rosaceae</i>	بادام کوهي**	تنگرس
13	<i>Andrachne rotundifolia</i>	<i>Euphorbiceae</i>	ديو سفيد*	-
14	<i>Andrachne telephioid</i>	<i>Euphorbiceae</i>	**_	-
15	<i>Atraphaxis aucheri</i> J ^{LR}	<i>Polygonaceae</i>	کاروان کش**	-
16	<i>Atraphaxis spinosa</i> L	<i>Polygonaceae</i>	**	-
17	<i>Berberis densiflora</i>	<i>Berberidaceae</i>	زرشک**	-
18	<i>Berberis crataegina</i> DC.	<i>Berberidaceae</i>	زرشک**	-
19	<i>Berberis integrima</i> Bge.	<i>Berberidaceae</i>	زرشک**	-
20	<i>Berberis orthobotrys</i> Bienert ex C.K.	<i>Berberidaceae</i>	زرشک راست خوشه **	-
21	<i>Berberis vulgaris</i> L.	<i>Berberidaceae</i>	زرشک**	-
22	<i>Buxus hyrcana</i> Pojark ^{EN}	<i>Buxaceae</i>	شمشاد*	کیش
23	<i>Calligonum</i> <i>persicum</i> (Boiss.&Buhse)Boi s. ^{LR}	<i>Polygonaceae</i>	اسکنبيل رودباري**	-
24	<i>Capparis spinosa</i> L.	<i>Capparidaceae</i>	کور***	-
25	<i>Carpinus Betullus</i>	<i>Coryllceae</i>	ممرز*	الس

	var.Betulus			
26	<i>Carpinus Betulus</i> var.typic	<i>Coryllceae</i>	ممرز*	الس
27	<i>Carpinus macrocarpa</i> (Willk.)H.Winkl.	<i>Corylaceae</i>	تغر**	جلم
28	<i>Carpinus orientalis</i> Mill.	<i>Corylaceae</i>	لور*	شرم
29	<i>Carpinus schuschaens</i> H.Winkl.	<i>Corylaceae</i>	كچف*	شرم
30	<i>Castanea sativa</i> Mill.	<i>Fagaceae</i>	شاه بلوط*	شاه بلوط
31	<i>Celtis australis</i> L.	<i>Ulmaceae</i>	داغداغان*	-
32	<i>Celtis caucasica</i> Willd.	<i>Ulmaceae</i>	درخت تا*	-
33	<i>Cerasus avium</i> (L.)Moench	<i>Rosaceae</i>	گیلاس وحشی*	
34	<i>Cerasus microcarpa</i> (C.A.Mey.)Boiss.subsp. microcarpa	<i>Rosaceae</i>	-راناس**	-
35	<i>Cercis siliquastrum</i> L.	<i>Caesalpinaceae</i>	ارغوان معمولی**	-
36	<i>Clerodendron Bungei</i> Steud.	<i>Verbenaceae</i>	کلردندرون**	-
37	<i>Cornus australis</i> C.A.Mey.	<i>Cornaceae</i>	سیاه ال**	سل
38	<i>Cornus mass</i> L.	<i>Cornaceae</i>	زغال اخته**	-
39	<i>Corylus avellana</i> L.	<i>Corylaceae</i>	فندق**	-
40	<i>Corylus colurna</i> L. ^{EN}	<i>Corylaceae</i>	فندق**	-
41	<i>Corylus maxima</i>		**	
42	<i>Cotoneaster hissarica</i> Pojark.	<i>Rosaceae</i>	شیر خشت**	-
43	<i>Cotoneaster integerrima</i> Medicus	<i>Rosaceae</i>	وجرد**	-
44	<i>Cotoneaster nummularioides</i> Pojark	<i>Rosaceae</i>	**_	-
45	<i>Cotoneaster racemiflora</i> (Desf.)Booth ex Spach	<i>Rosaceae</i>	**_	-

46	<i>Cottoneaster multiflora</i> Bge.	<i>Rosaceae</i>	**_	-
47	<i>Crataegus aronia</i> (L.)Bosc ex DC.	<i>Rosaceae</i>	زالزالک زرد**	-
48	<i>Crataegus microphylla</i> C.Koch.	<i>Rosaceae</i>	زالزالک برگ ریز**	سرخه ولیک
49	<i>Crataegus melanocarpa</i> M.B.	<i>Rosaceae</i>	**	سیاه ولیک، کمار
50	<i>Crataegus pentagina</i>	<i>Rosaceae</i>	_***	-
51	<i>Crataegus pseudoheteophylla</i> A.Pojark	<i>Rosaceae</i>	زالزالک ایروانی**	-
52	<i>Crataegus pseudomelanocarpa</i> M.Pop.ex A.Pogark.	<i>Rosaceae</i>	زالزالک ترکمنستانی**	-
53	<i>Cupressus sempervirens</i> L.var.horizontalis ^{LR}	<i>Cupressaceae</i>	زربین*	زربین
54	<i>Cydonia oblonga</i> Mill	<i>Rosaceae</i>	*به	توج
55	<i>Daphne rechingeri</i> Wendelbo ^{EN}	<i>Thymelaeacea</i>	_****	-
56	<i>Daphne Mezereum</i> L ^{LR}	<i>Thymelaeaceae</i>	هفت برگ**	-
57	<i>Diospyros lotus</i> L.	<i>Ebenaceae</i>	*خرمندی*	اربو
58	<i>Ephedra major</i> Host	<i>Ephedraceae</i>	**ریش بز**	
59	<i>Ephedra procera</i> Fsch.	<i>Ephedraceae</i>	***ریش بز***	
60	<i>Evonymus velutina</i> (C.A.Mey.)Fisch.&C.A.Mey.	<i>Celasteraceae</i>	**	
61	<i>Evonymus latifolia</i> (L.)Mill.	<i>Celasteraceae</i>	**	
62	<i>Fagus orientalis</i> Lipsky.	<i>Fagaceae</i>	*راش*	الاش
63	<i>Ficus carica</i> L.	<i>Moraceae</i>	*انجیر*	انجیل
64	<i>Frangula alnus</i> Miller ^{VU}	<i>Rhamnaceae</i>	سیاه توسه**	سیاه توسه
65	<i>Frangula grandifolia</i> (Fish.&C.A.Mey ^{LR})	<i>Rhamnaceae</i>	**	

66	<i>Fraxinus excelsior</i> Lsubsp.coriariifolia ^{LR}	<i>Oleaceae</i>	ون**	ون
67	<i>Gleditschia caspica</i> Desf.	<i>Caesalpinaceae</i>	ليلكي*	لك - ليلكي
68	<i>Hypericum Androsaemum</i> L.	<i>Hypericaceae</i>	متامني***	
70	<i>Ilex spinigera</i> (Loes)Loes	<i>Aquifoliaceae</i>	خاس**	خاس
71	<i>Jasminum fruticans</i> L	<i>Oleaceae</i>	ياسمن زرد**	
72	<i>Juglans regia</i> L.	<i>Juglandaceae</i>	گردو*	فوز-اغوز
73	<i>Juniperus communis</i> L	<i>Cupressaceae</i>	اريس**	
74	<i>Juniperus excelsa</i> M.	<i>Cupressaceae</i>	ارس*	ارس
75	<i>Juniperus sabina</i> L.	<i>Cupressaceae</i>	ماي مرز**	
76	<i>Laurocerasus officinalis</i> Roemer	<i>Rosaceae</i>	جل**	چرم ليوه
77	<i>Ligustrum vulgare</i> L.	<i>Oleaceae</i>	برگ نو**	مندارچه
78	<i>Lonicera caucasica</i> Pall.	<i>Caprifoliaceae</i>	پلاخور قفقازي**	پلاخور چوب
79	<i>Lonicera floribunda</i> Boiss.&Buhse	<i>Caprifoliaceae</i>	پلاخور البرزي**	پلاخور چوب
80	<i>Lonicera iberica</i> M.B.	<i>Caprifoliaceae</i>	**	پلاخور چوب
81	<i>Lonicera nummularifolia</i> Jaub.&Spach	<i>Caprifoliaceae</i>	شن**	پلاخور چوب
82	<i>Lycium ruthenicum</i> Murr.	<i>Solanaceae</i>	ديوخار**	
83	<i>Malus orientalis</i> Ugl.	<i>Rosaceae</i>	سيب جنگلي*	ترش سيب
84	<i>Melia azedarach</i> L.	<i>Meliaceae</i>	زيتون تلخ*	شال زيتون
85	<i>Mespilus germanica</i> L	<i>Rosaceae</i>	ازگيل**	سر-کونوس
86	<i>Morus alba</i> L.	<i>Moraceae</i>	توت سفيد*	توت
87	<i>Morus nigra</i> L.	<i>Moraceae</i>	شاه توت*	شاه توت
88	<i>Myricaria germanica</i> (L.)Desv.	<i>Tamaricaceae</i>	شبه گز**	
89	<i>Myrtus communis</i> L.	<i>Myrtaceae</i>	مورد**	مورت
90	<i>Nitraia Schoberi</i> L.var.caspica Pall.	<i>Zygophyllaceae</i>	قره داغ**	

91	<i>Olea europaea</i> L. ^{LR}	<i>Oleaceae</i>	زیتون*	زیتون
92	<i>Paliurus spina-christi</i> Miller ^{LR}	<i>Rhamnaceae</i>	سیاه تلو**	گرگ بور
93	<i>Parrotia persica</i> (DC.)C.A.Mey. ^{LA}	<i>Hammamelidaceae</i>	انجیلی*	توی دار
94	<i>Persica vulgaris</i> Mill.	<i>Rosaceae</i>	شفتالو**	
95	<i>Pistacia mutica</i> Fisch&C.A.Mey.	<i>Anacardiaceae</i>	بنه**	
96	<i>Populus caspica</i> Bornm ^{EN}	<i>Salicaceae</i>	سفیدپلت*	سفیدپلت
97	<i>Populus nigra</i> L. ^{DD}	<i>Salicaceae</i>	تبریزی*	
98	<i>Prosopis fracta</i> (Bens&Soland.)Macbr var.fracta	<i>Mimosaceae</i>	جغجنگ**	
99	<i>Prunus caspica</i>	<i>Rosaceae</i>	آلوجه**	خولی
100	<i>Prunus divaricata</i> Ledeb.	<i>Rosaceae</i>	آلوجه**	خولی
101	<i>Prunus domestica</i> L.	<i>Rosaceae</i>	آلوجه**	خولی
102	<i>Prunus spinosa</i> L.	<i>Rosaceae</i>	آلوجه**	خولی
103	<i>Pterocaria fraxinifolia</i> (Lam.)Spach ^{LR}	<i>Juglandaceae</i>	لرگ*	ملال، کهل
104	<i>Pteropyrrum Aucheri</i> Jaub.&Spach	<i>Polygonaceae</i>	پرند**	
105	<i>Pteropyrum oliveri</i> Jaub.&Spach	<i>Polygonaceae</i>	پرند**	
106	<i>Punica Granatum</i> L.	<i>Punicaceae</i>	انار وحشی**	ترش انار
107	<i>Pyrus Boissieriana</i> B	<i>Rosaceae</i>	تلكا*	اربوخج
108	<i>Pyrus communis</i> L.	<i>Rosaceae</i>	گلایبی*	خج
109	<i>Pyrus Grossheimi</i> Fed	<i>Rosaceae</i>	گلایبی تالشی*	
110	<i>Pyrus hyrcana</i> Feder	<i>Rosaceae</i>	گلایبی خزری*	
111	<i>Quercus castenifolia</i> C.A.Mey.subsp. castenifolia	<i>Fagaceae</i>	بلوط*	بلندمازو

112	<i>Quercus macranthera</i> Fisch.etMey.	<i>Fagaceae</i>	اوري*	اوري
115	<i>Quercus petraea</i> L.	<i>Fagaceae</i>	سفیدمازو*	سفیدمازو
116	<i>Rhamnus catharica</i> L.	<i>Rhamnaceae</i>	سیاه تنگرس**	تنگرس
117	<i>Rhamnus pallasii</i> Fisch.etMey.	<i>Rhamnaceae</i>	سیاه تنگرس**	تنگرس
118	<i>Rhamnus spatulaefoli</i> Fisch&C.A.Mey.	<i>Rhamnaceae</i>	سیاه تنگرس**	تنگرس
119	<i>Rhus coriaria</i> L.	<i>Anacardiaceae</i>	سماق**	
120	<i>Ribes orientale</i> Desf.	<i>Saxifragaceae</i>	قره قات**	
121	<i>Ribes uva-crispa</i> L.	<i>Saxifragaceae</i>	گالش انگور**	
122	<i>Rosa canina</i> L.	<i>Rosaceae</i>	نسترن وحشی**	سگ گل
123	<i>Salix acmophylla</i> Boiss.	<i>Salicaceae</i>	بیدزرد*	
124	<i>Salix aegyptica</i> L.	<i>Salicaceae</i>	بیدمشک*	
125	<i>Salix alba</i> L.	<i>Salicaceae</i>	بیدسفید*	وي دار
126	<i>Salix elbursensis</i> Boiss.	<i>Salicaceae</i>	بیدقرمز**	سرخ بید
127	<i>Salix fragilis</i> S.G.G	<i>Salicaceae</i>	**	
128	<i>Salix zygostemon</i> Boi	<i>Salicaceae</i>	بیدشمیرانی**	
129	<i>Sambucus nigra</i> L.	<i>Caprifolacea</i>	انگورکولی**	
130	<i>Sophora hortensis</i>	<i>Papilionaceae</i>	تلخه بیان**	
131	<i>Sorbus aucuparia</i> L.	<i>Rosaceae</i>	تیس*	
132	<i>Sorbus persica</i> Hedl.	<i>Rosaceae</i>	بارانک ایرانی	
133	<i>Sorbus torminalis</i> (L.)Crantz	<i>Rosaceae</i>	بارانک*	
134	<i>Tamarix ramosissima</i> Ledeb.	<i>Tamaricaceae</i>	گز پرشاخه**	گز
135	<i>Taxus baccata</i> L. ^{EN}	<i>Taxaceae</i>	سرخدار*	سرخدار، سوختال
136	<i>Tilia platyphyllos</i> Scop.subsp. platyphyllos	<i>Tiliaceae</i>	نمدار*	نردمار
137	<i>Ulmus glabra</i> Hudson	<i>Ulmaceae</i>	ملج*	ملج
138	<i>Ulmus minor</i> Miller	<i>Ulmaceae</i>	اوجا	لي دار
140	<i>Vaccinium Arctostaphyllos</i> L.	<i>Ericaceae</i>	سیاه گیله***	سیاه گیله

	LR.			
141	<i>Viburnum lantana</i> L.	<i>Caprifoliaceae</i>	هفت کول**	
142	<i>Zelkova carpinifolia</i> (Pall.)Dipp.	<i>Ulmaceae</i>	*آزاد	آزاد
143	<i>Zygophyllum atriplicoides</i> Fisch.&C.A.Mey ^{LR}	<i>Zygophyllaceae</i>	**	

Mazandaran provine's tree and shrub species (Research project, (1382-1387) 2004-2009, Panahpour):

Row	Scientific name	Genus	Family	Persian name
1	<i>Acer campestre</i> L.	<i>Acer</i>	<i>Aceraceae</i>	
2	<i>Acer cappadocicum</i> Gled.	"	<i>Aceraceae</i>	
3	<i>Acer hyrcanum</i> Fisch. & C.A.Mey	"	<i>Aceraceae</i>	
4	<i>Acer monspessulanum</i> L.subsp.ibericum(M. B.)Yaltrik	"	<i>Aceraceae</i>	
5	<i>Acer platanoides</i> L.	"	<i>Aceraceae</i>	
6	<i>Acer velutinum</i> Boiss. Var. glabresces	"	<i>Aceraceae</i>	
7	<i>Rhus coriaria</i> L.	<i>Rhus</i>	<i>Anacardiaceae</i>	
8	<i>Ilex spinigera</i> Loes	<i>Ilex</i>	<i>Aquifoliaceae</i>	
9	<i>Berberis integririma</i> Bge.	<i>Berberis</i>	<i>Berberidaceae</i>	
10	<i>Berberis vulgaris</i> L.	<i>Berberis</i>	<i>Berberidaceae</i>	
11	<i>Alnus glutinosa</i> (L.)Gaertn.subsp.bar bata	<i>Alnus</i>	<i>Betulaceae</i>	
12	<i>Alnus subcordata</i> C.A.Mey.	<i>Alnus</i>	<i>Betulaceae</i>	
13	<i>Betula pendula</i> Roth	<i>Betula</i>	<i>Betulaceae</i>	
14	<i>Buxus hyrcana</i> Pojarck	<i>Buxus</i>	<i>Buxacease</i>	
15	<i>Cercis siliquastrum</i> L.	<i>Cercis</i>	<i>Caesalpinacea</i> e	

16	<i>Gleditschia caspica</i> <i>Desf.</i>	<i>Gleditschia</i>	<i>Caesalpinaceae</i>	
17	<i>Capparis spinosa</i> L.	<i>Capparis</i>	<i>Capparidaceae</i>	
18	<i>Lonicera caucasica</i> <i>Pall.</i>	<i>Lonicera</i>	<i>Caprifoliaceae</i>	
19	<i>Lonicera floribunda</i> <i>Boiss. & Buhse</i>	<i>Lonicera</i>	<i>Caprifoliaceae</i>	
20	<i>Lonicera iberica</i> <i>M.B.</i>	<i>Lonicera</i>	<i>Caprifoliaceae</i>	
21	<i>Lonicera nummularifolia</i> <i>Jaub. & Spach</i>	<i>Lonicera</i>	<i>Caprifoliaceae</i>	
22	<i>Viburnum lantana</i> L.	<i>Viburnum</i>	<i>Caprifoliaceae</i>	
23	<i>Viburnum opalus</i>	<i>Viburnum</i>	<i>Caprifoliaceae</i>	
24	<i>Evonymus velutina</i> (C.A.Mey.) Fisch. & C.A.Mey.	<i>Evonymus</i>	<i>Celasteraceae</i>	
25	<i>Evonymus latifolia</i> (L.) Mill.	<i>Evonymus</i>	<i>Celasteraceae</i>	
26	<i>Cornus australis</i> C.A.Mey.	<i>Cornus</i> .	<i>Cornaceae</i>	
27	<i>Carpinus orientalis</i> Mill.	<i>Carpinus</i>	<i>Corylaceae</i>	
28	<i>Carpinus schuschaensis</i> H. Winkl.	<i>Carpinus</i>	<i>Corylaceae</i>	
29	<i>Corylus avellana</i> L.	<i>Corylus</i>	<i>Corylaceae</i>	
30	<i>Carpinus betulus</i> var. <i>Betulus</i>	<i>Carpinus</i>	<i>Coryllaceae</i>	
31	<i>Cupressus sempervirens</i> L. var. <i>horizontalis</i>	<i>Cupressus</i>	<i>Cupressaceae</i>	
32	<i>Juniperus communis</i> L.	<i>Juniperus</i>	<i>Cupressaceae</i>	
33	<i>Juniperus excelsa</i> M.	<i>Juniperus</i>	<i>Cupressaceae</i>	
34	<i>Juniperus sabina</i> L.	<i>Juniperus</i>	<i>Cupressaceae</i>	
35	<i>Thuja orientalis</i> L.	<i>Thuja</i>	<i>Cupressaceae</i>	(در یک نقطه در سنگده دیده شد)
36	<i>Diospyros lotus</i> L.	<i>Diospyros</i> .	<i>Ebenaceae</i>	
37	<i>Ephedra major</i> Host	<i>Ephedra</i>	<i>Ephedraceae</i>	
38	<i>Vaccinium actostaphylos</i> L.	<i>Vaccinium</i>	<i>Ericaceae</i>	

39	<i>Andrachne rotundifolia</i>	<i>Andrachne</i>	<i>Euphorbiceae</i>	
40	<i>Andrachne telephioid</i>	<i>Andrachne</i>	<i>Euphorbiceae</i>	
41	<i>Fagus orientalis</i> <i>Lipsky.</i>	<i>Fagus</i>	<i>Fagaceae</i>	
42	<i>Quercus casteneifolia</i> <i>C.A.Mey.subsp.</i> <i>castenifolia</i>	<i>Quercus</i>	<i>Fagaceae</i>	
43	<i>Quercus macranthera</i> <i>Fisch.Mey.</i>	<i>Quercus.</i>	<i>Fagaceae</i>	
44	<i>Quercus petraea L.</i>	<i>Quercus</i>	<i>Fagaceae</i>	
45	<i>Parrotia persica</i> <i>(DC.)C.A.Mey</i>	<i>Parrotia</i>	<i>Hammamelida</i> <i>cea</i>	
46	<i>Juglans regia L.</i>	<i>Juglans</i>	<i>Juglandaceae</i>	
47	<i>Pterocaria fraxinifolia</i> <i>(Lam.)Spach</i>	<i>Pterocaria</i>	<i>Juglandaceae</i>	
48	<i>Sida rhombia</i>	<i>Sida</i>	<i>Malvaceae</i>	
49	<i>Melia azedarach L.</i>	<i>Melia</i>	<i>Meliaceae</i>	
50	<i>Albizzia julibrissin</i> <i>Durazz.</i>	<i>Albizzia</i>	<i>Mimosaceae</i>	
51	<i>Prosopis fracta</i> <i>(Bens&Soland.)</i>	<i>Prosopis</i>	<i>Mimosaceae</i>	
52	<i>Ficus carica L.</i>	<i>Ficus</i>	<i>Moraceae</i>	
53	<i>Morus alba L.</i>	<i>Morus</i>	<i>Moraceae</i>	
54	<i>Morus nigra L.</i>	<i>Morus</i>	<i>Moraceae</i>	
55	<i>Fraxinus excelsior</i> <i>Lsubsp.coriariifolia</i>	<i>Fraxinus</i>	<i>Oleaceae</i>	
56	<i>Jasminum fruticans</i> <i>L.</i>	<i>Jasminum</i>	<i>Oleaceae</i>	
57	<i>Jasminum officinalis</i>	<i>Jasminum</i>	<i>Oleaceae</i>	
58	<i>Ligustrum vulgare L.</i>	<i>Ligustrum</i>	<i>Oleaceae</i>	
59	<i>Olea europaea L.</i> (فقط در عباس آباد بهشهر دیده شد)	<i>Olea</i>	<i>Oleaceae</i>	
60	<i>Atraphaxis aucheri</i> <i>J.</i>	<i>Atraphaxis</i>	<i>Polygonaceae</i>	
61	<i>Atraphaxis spinosa</i> <i>L.</i>	<i>Atraphaxis</i>	<i>Polygonaceae</i>	

62	<i>Pteropyrrum aucheri</i> <i>Jaub.&Spach</i>	<i>Pteropyrrum</i>	<i>Polygonaceae</i>	
63	<i>Punica granatum</i> L.	<i>Punica.</i>	<i>Punicaceae</i>	
64	<i>Frangula grandifolia</i> (<i>Fish.&C.A.Mey</i> ^{LR})	<i>Frangula</i>	<i>Rhamnacea</i>	
65	<i>Frangula alnus</i> <i>Miller</i>	<i>Frangula</i>	<i>Rhamnaceae</i>	
66	<i>Paliurus spinachristi</i> Miller	<i>Paliurus</i>	<i>Rhamnaceae</i>	
67	<i>Rhamnus cathartica</i> L.	<i>Rhamnus</i>	<i>Rhamnaceae</i>	
68	<i>Rhamnus palassi</i> <i>Fisch.etMey.</i>	<i>Rhamnus</i>	<i>Rhamnaceae</i>	
69	<i>Rhamnus spatulaefoli</i> <i>Fisch&C.A.Mey.</i>	<i>Rhamnus</i>	<i>Rhamnaceae</i>	
70	<i>Sorbus graeca</i>	<i>Sorbus</i>	<i>Rosaceae</i>	
70	<i>Cerasus avium</i> (L.) <i>Moench</i>	<i>Cerasus</i>	<i>Rosaceae</i>	
72	<i>Cotoneaster hissarica</i> Pojark.	<i>Cotoneaster</i>	<i>Rosaceae</i>	
73	<i>Cotoneaster integerrima</i> Medicus	<i>Cotoneaster</i>	<i>Rosaceae</i>	
74	<i>Cotoneaster nummularioides</i> <i>Pojark</i>	<i>Cotoneaster</i>	<i>Rosaceae</i>	
75	<i>Cotoneaster racemiflora</i> (<i>Desf.</i>)Booth ex <i>Spach</i>	<i>Cotoneaster</i>	<i>Rosaceae</i>	
76	<i>Populus caspica</i> <i>Born</i>	<i>Populus</i>	<i>Salicaceae</i>	
77	<i>Cottoneaster multiflora</i> Bge.	<i>Cottoneaster</i>	<i>Rosaceae</i>	
78	<i>Crataegus aronia</i> (L.) Bosc ex <i>DC.</i>	<i>Crataegus</i>	<i>Rosaceae</i>	
79	<i>Crataegus melanocarpa</i> M.B.	<i>Crataegus</i>	<i>Rosaceae</i>	
80	<i>Crataegus microphylla</i> C.Koch.	<i>Crataegus</i>	<i>Rosaceae</i>	
81	<i>Crataegus pentagina</i>	<i>Crataegus</i>	<i>Rosaceae</i>	
82	<i>Cydonia oblonga</i>	<i>Cydonia</i>	<i>Rosaceae</i>	

	<i>Mill</i>			
83	<i>Laurocerasus officinalis</i> Roemer	<i>Laurocerasus</i>	<i>Rosaceae</i>	
84	<i>Malus orientalis</i> Ugl.	<i>Malus</i>	<i>Rosaceae</i>	
85	<i>Mespilus germanica</i> L	<i>Mespilus</i>	<i>Rosaceae</i>	
86	<i>Persica vulgaris</i> Mill.	<i>Persica</i>	<i>Rosaceae</i>	
87	<i>Prunus caspica</i>	<i>Prunus</i>	<i>Rosaceae</i>	
88	<i>Prunus divaricata</i> Ledeb.	<i>Prunus</i>	<i>Rosaceae</i>	
89	<i>Prunus domestica</i> L.	<i>Prunus</i>	<i>Rosaceae</i>	
90	<i>Pyrus boissieriana</i> B	<i>Pyrus</i>	<i>Rosaceae</i>	
91	<i>Pyrus communis</i> L.	<i>Pyrus</i>	<i>Rosaceae</i>	
92	<i>Pyrus grossheimi</i> Fed	<i>Pyrus</i>	<i>Rosaceae</i>	
93	<i>Pyrus hyrcana</i> Feder	<i>Pyrus</i>	<i>Rosaceae</i>	
94	<i>Rosa canina</i> L.	<i>Rosa</i>	<i>Rosaceae</i>	
95	<i>Sorbus aucuparia</i> L.	<i>Sorbus</i>	<i>Rosaceae</i>	
96	<i>Sorbus persica</i> Hedl.	<i>Sorbus</i>	<i>Rosaceae</i>	
97	<i>Sorbus tiliaefolia</i>	<i>Sorbus</i>	<i>Rosaceae</i>	
98	<i>Salix acmophylla</i> Boiss.	<i>Salix</i>	<i>Salicaceae</i>	
99	<i>Sorbus torminalis</i> (L.)Crantz	<i>Sorbus</i>	<i>Rosaceae</i>	
100	<i>Salix aegyptica</i> L.	<i>Salix</i> .	<i>Salicaceae</i>	
101	<i>Spirea sheikhi</i>	<i>Spirea</i>	<i>Rosaceae</i>	
102	<i>Salix alba</i> L.	<i>Salix</i>	<i>Salicaceae</i>	
103	<i>Salix elbursensis</i> Boiss.	<i>Salix</i>	<i>Salicaceae</i>	
104	<i>Salix fragilis</i> S.G.G	<i>Salix</i>	<i>Salicaceae</i>	
105	<i>Salix zygostemon</i> Boi	<i>Salix</i>	<i>Salicaceae</i>	
106	<i>Ribes orientale</i> Desf.	<i>Ribes</i>	<i>Saxifragaceae</i>	
107	<i>Ribes uva-crispa</i> L.	<i>Ribes-</i>	<i>Saxifragaceae</i>	
108	<i>Lycium ruthenicum</i> Murr.	<i>Lycium</i>	<i>Solanaceae</i>	
109	<i>Myricaria germanica</i> (L.)Desv.	<i>Myricaria</i>	<i>Tamaricaceae</i>	

110	<i>Tamarix ramosissima</i> Ledeb.	<i>Tamarix</i>	<i>Tamaricaceae</i>	
111	<i>Taxus baccata</i> L	<i>Taxus</i>	<i>Taxaceae</i>	
112	<i>Daphne mezereum</i> L	<i>Daphne</i>	<i>Thymelaeaceae</i>	
113	<i>Daphne pontica</i>	<i>Daphne</i>	<i>Thymeliaceae</i>	
114	<i>Tilia platyphyllos</i> Scop. subsp. <i>platyphyllos</i>	<i>Tilia</i>	<i>Tiliaceae</i>	
115	<i>Celtis australis</i> L.	<i>Celtis</i>	<i>Ulmaceae</i>	
116	<i>Celtis caucasica</i> Willd.	<i>Celtis</i>	<i>Ulmaceae</i>	
117	<i>Ulmus glabra</i> Hudson	<i>Ulmus</i>	<i>Ulmaceae</i>	
118	<i>Ulmus minor</i> Miller	<i>Ulmus</i>	<i>Ulmaceae</i>	
119	<i>Zelkova carpinifolia</i> (Pall.) Dipp.	<i>Zelkova</i>	<i>Ulmaceae</i>	
120	<i>Crataegus pseudomelanocarpa</i> M. Pop. ex A. Pogark.	<i>Crataegus</i>	<i>Rosaceae</i>	

The Red List provided by IUCN in 2010 for plant species (as well as animal species) are as follows (Note: the list need to be up dated because some date are old).

According to this list one (1) animal species is disappeared, 15 animal species are highly endangered (CR category), 23 animal are endangered (EN category), and 79 animal species are vulnerable (VU category). And also 23 plant species are in different category of vulnerability (www.fasletaze.com).

Critically animal Endangered (CR) 2010:

15 species

Citation: IUCN 2010. IUCN Red List of Threatened Species. Version 2010.4.

<www.iucnredlist.org>. Downloaded on **14 June 2011**.

Endangered animal Species (EN) 2010:

23 species

Citation: IUCN 2010. IUCN Red List of Threatened Species. Version 2010.4.

<www.iucnredlist.org>. Downloaded on **14 June 2011**.

<http://www.noandishaan.com/forums/showthread.php?p=605029>

Vulnerable animal Species (VU) 2010:

79 species

Citation:

IUCN 2010. IUCN Red List of Threatened Species. Version 2010.4.
<www.iucnredlist.org>. Downloaded on **14 June 2011**.

Because of closed link between fauna (even in the Caspian Sea environment) and flora some of vulnerable and endangered animal species are highlighted. Forest ecosystems are main habitat of wildlife and important environment for growing of several plant as well as animal species. Eventhough this research report are concentrated on the forest woody plant species as trees or shrubs.

Following information are provided by IUCN (in 1998) on one of the main the important native Iranian forest woody species - *Taxus baccata* – which is in Extinct condition (EX category, lowe risk/ least concern).

**The IUCN Red List of Threatened Species™**

2011.1

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Taxus baccata



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Taxonomy [\[top\]](#)

Kingdom	Phylum	Class	Order	Family
PLANTAE	TRACHEOPHYTA	CONIFEROPSIDA	CONIFERALES	TAXACEAE

Scientific Name: *Taxus baccata*

Species Authority: L.

Assessment Intableation [\[top\]](#)

Red List Category & Criteria: Lower Risk/least concern [ver 2.3](#)

Year Assessed: 1998

Annotations: Needs updating

Assessor/s: Conifer Specialist Group

Geographic Range [\[top\]](#)

Native:

Albania; Algeria; Andorra; Armenia (Nagorno-Karabakh); Austria; Azerbaijan (Nakhichevan); Belgium; Bulgaria; Czech Republic; Denmark; Estonia; Finland; France (Corse); Georgia (Abkhaziya, Adzhariya); Germany; Gibraltar; Greece (Kriti);

Countries: Guernsey; Hungary; **Iran, Islamic Republic of**; Ireland; Isle of Man; Italy (Sardegna, Sicilia); Jersey; Latvia; Liechtenstein; Luxembourg; Malta; Moldova; Monaco; Montenegro; Morocco; Netherlands; Norway; Poland; Portugal; Romania; Russian Federation (Chechnya, Dagestan, Ingushetiya, Kabardino-Balkariya, Kaliningrad, Karacheyvo-Cherkessiya, Krasnodar,

Severo-Osetiya, Stavropol); Serbia; Spain (Balears); Sweden; Switzerland; Turkey (Turkey-in-Europe); Ukraine (Krym); United Kingdom

Habitat and Ecology [\[top\]](#)

Systems: Terrestrial

Conifer Specialist Group 1998. *Taxus baccata*. In: IUCN 2011.

Citation: IUCN Red List of Threatened Species. Version 2011.1. <www.iucnredlist.org>. Downloaded on **21 September 2011**.

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The list of the priority forest tree and other woody plant species in the country and reason for priority is provided in Table 4.

Table 4. Priority species (scientific names)

Priority species			Reasons for priority
Scientific name	Tree (T) or other (O)	Native (N) or exotic (E)	
در حوزه خزری (Hyrcanian)			
<i>Fagus orientalis</i> ,	T	N	Economic, social,
<i>Carpinus betulus</i> ,	T	N	Economic, social,
<i>Acer velutinum</i> ,	T	N	Economic, social,
<i>Quercus castaneifolia</i> ,	T	N	Economic, social,
<i>Fraxinus excesior</i>	T	N	Economic, social,

Quercus marcanthera,	T	N	Economic, social,
Carpinus orientalis,	T	N	Economic, social,
Acer campestre,	T	N	Economic, social,
Fraxinus rotundifolia	T	N	Economic, social,
Sorbus torminalis			
Buxus hyrcanus			
Acer cappadocicum			
Ulmus glabra			
Zelkova carpinifolia			
Tilia begonifolia			
Cerasus avium			
در حوزه زاگرس (Zagros)			
Quercus infectoria,	T	N	Economic, social,
Quercus libani,	T	N	Economic, social,
Quercus brantii,	T	N	Economic, social,
Celtis caucasica,	T	N	Economic, social,
Amygdalus scoparia,	O (T)	N	Economic, social,
Amygdalus lycioides,	O (T)	N	Economic, social,
Pistacia atlantica	O (T)	N	Economic, social,
Pistacia khinjuk,	O (T)	N	Economic, social,
Amygdalus haussknechtii,	O (T)	N	Economic, social,
Amygdalus arabica			
Acer monspessulanum			
در حوزه جنوب ایران (South of Iran)			
Avicinia marina,	O (T)	N	Economic, social or cultural importance;
Rizophora mucronata,	O (T)	N	Economic, social or cultural importance;
Acacia tortilis,	T	N	Economic, social,
Capparis decidua	O (T)		
Acacia ehrenbergiana,	O (T)		Economic, social,
Acacia oerfota,	O (T)		Economic, social,
Acacia nilotica,	O (T)		Economic, social,
Prosopis ceneraria,	T		
Ziziphus spina-	T		

christi,			
Ziziphus nummularia			
Tecomella undulata			

Examples of reasons for priority:
Economic, social or cultural importance; Threatened;
Invasive (priority for removal)

It is estimated by Iranian botanists that there are as many as 12,000 species in Iran. These species are in the process of collection and identification by the Research Institute of Forest and Rangeland. Amongst the Iranian flora, there are some of the most important food crops such as wheat and its wild relatives. The relatives of these species are still available in the wild (Taeb M., 1995).

Approximately 8000 plant species of 167 families and 1200 genera have been recorded in Iran, Nearly 20% of these species are considered endemic (Department of Environment, 2010).

Tree plant species known to have at least one of their centers of origin in Iran (Taeb, 1995):

Pistacia		
1	<i>P. atlantica</i> Desf. Subsp. <i>cabulica</i> (Stocks) Rech.f.	
2	<i>P. atlantica</i> Desf. Subsp. <i>Matico</i> (Fisch.&Mey.) Rech.f.	
3	<i>P. atlantica</i> Desf. Subsp. <i>cowardice</i> (Zonary) Rech.f.	
4	<i>P. khinjuk</i> Stocks.	
Amygdalus		
1	<i>A. communis</i> L.	
2	<i>A. trichamygdalus</i> (Hand-Mazz.) Woronow.	
3	<i>A. wendelboi</i> Freitag.	
4	<i>A. korshinskyi</i> (Hand-Mazz.) Bornm.	
5	<i>A. fenzliana</i> (Fritsch) Lipsky	
6	<i>A. haussknechtii</i> (C.K.Schneider) Bornm.	
7	<i>A. orientalis</i> Dub.	
8	<i>A. kotschyi</i> Boiss. & Hohen.	
9	<i>A. carduchorum</i> Bornm.	
10	<i>A. paboti</i> Browiez.	
11	<i>A. elaeagnifolia</i> Spach Subsp. <i>elaegnifolia</i> .	
12	<i>A. elaeagnifolia</i> Spach Subsp. <i>leiocarpa</i> (Boiss.) Browiez.	
13	<i>A. reticulata</i> Runemark ex <i>khatamsaz</i> .	
14	<i>A. scoparia</i> Spach.	
15	<i>A. glauca</i> Browiez.	

16	<i>A. arabica</i> Oliv.	
17	<i>A. nairica</i> Fed. et Takht.	
18	<i>A. spinosissima</i> Bge. Subsp. <i>spinosissima</i> .	
19	<i>A. spinosissima</i> Bge. Subsp. <i>turcomanica</i> (Linez.) Browiez	
20	<i>A. brahuica</i> Boiss.	
21	<i>A. lycioides</i> Spach var. <i>lycioides</i> .	
22	<i>A. lycioides</i> Spach va. <i>horrida</i> (Spach) Browiez.	
23	<i>A. eburnea</i> Spach.	
24	<i>A. erioclada</i> Bornm.	
Mespilus		
1	<i>M. germanica</i> L.	
Malus		
	<i>M. domestic</i> Borkh.	
	<i>M. orientalis</i> Ugl.	
Pyrus		
1	<i>P. boissieriana</i> Buhse.	
2	<i>P. kandevanica</i> Ghahreman & Khatamsaz.	
3	<i>P. communis</i> L.	
4	<i>P. grossheimii</i> Fedor.	
5	<i>P. hyrcana</i> Fedor.	
6	<i>P. turcomanica</i> Maleev.	
7	<i>P. farsistanica</i> Browiez.	
8	<i>P. syriaca</i> Boiss. Va. <i>Syriaca</i> .	
9	<i>P. syriaca</i> Boiss. Va. <i>oxyprion</i> (Wor.) Diap.	
10	<i>P. syriaca</i> Boiss. Va. <i>omicrophylla</i> Zoh. ex Browiez.	
11	<i>P. mazanderanica</i> Schonbeck-Temesy.	
12	<i>P. glabra</i> Boiss.	
13	<i>P. salicifolia</i> Pall.	
14	<i>P. elaeagnifolia</i> (<i>errore elaeagnifolia</i>) Pall.	
Cydonia		
1	<i>C. oblonga</i> Miller.	photo
Prunus		
1	<i>P. spinosa</i> L.	
2	<i>P. divaricata</i> Ledeb. Subsp. <i>divaricata</i> .	
3	<i>P. divaricata</i> Ledeb. Subsp. <i>casgica</i> (Kov. & Ekim.) Browiez	
Armeniaca		
1	<i>A. vulgaris</i> Lam.	photo
Persica		
1	<i>P. vulgaris</i> Miller.	Image painting
Cerasus		
1	<i>C. brachypetala</i> Boiss. Va. <i>brachypetala</i> .	
2	<i>C. brachypetala</i> Boiss. Va. <i>bornmulleri</i> (Schneider) Browiez.	

3	<i>C. incana</i> (Pall.) Spach.	
4	<i>C. araxina</i> Pojark. Va. <i>araxina</i> .	
5	<i>C. araxina</i> Pojark. Va. <i>Sintenisi</i> (Schneider) Browiez.	
6	<i>C. pseudoprostrata</i> Pojark.	
7	<i>C. chorassanica</i> Pojark.	
8	<i>C. microcarpa</i> (C.A. Mey.) Boiss. Subsp. <i>microcarpa</i> .	
9	<i>C. microcarpa</i> (C.A. Mey.) Boiss. Subsp. <i>tortuosa</i> (Boiss. & Hausskn.) Browiez.	
10	<i>C. microcarpa</i> (C.A. Mey.) Boiss. Subsp. <i>diffusa</i> (Boiss. & Hausskn.) Browiez.	
11	<i>C. avium</i> (L.) Moench.	
12	<i>C. vulgaris</i> Miller.	
13	<i>C. mahaleb</i> (L.) Miller.	
Olea		
1	<i>O. europaea</i> L.	
Punica		
1	<i>P. granatum</i> L.	Photo + info
Vitis		
1	<i>V. vinifera</i> Cult.	
2	<i>V. sylvestris</i> C.C.Gmelin.	
3	<i>V. sylvestris</i> C.C.Gmelin Subsp. <i>anebophylla</i> Kolen.	
4	<i>V. sylvestris</i> C.C.Gmelin Subsp. <i>trichophylla</i> Kolen.	
Morus		
1	<i>M. nigra</i> L.	
2	<i>M. alba</i> L.	
Ficus		
1	<i>F. carica</i> L. Subsp. <i>carica</i> .	
2	<i>F. carica</i> L. Subsp. <i>rupestris</i> (Hausskn. ex Boiss.)Browiez.	
3	<i>F. johannis</i> Boiss. Subsp. <i>johannis</i> .	
4	<i>F. johannis</i> Boiss. Subsp. <i>afghanistanica</i> (Warb.) Browiez.	
5	<i>F. palmata</i> Forssk. Subsp. <i>virgata</i> (Roxb.) Browiez.	
6	<i>F. religiosa</i> L.	
7	<i>F. benghalensis</i> L.	
Phoenix		
1	<i>P. dactylifera</i> L.	
Lepidium		
1	<i>L. aucheri</i> Boiss.	?
2	<i>L. sativum</i> L.	
3	<i>L. rudera</i> L.	
4	<i>L. perfoliatum</i> L.	
5	<i>L. vesicarium</i> L.	

6	<i>L. cartilagineum</i> (J.mayer) Thell. Subsp. <i>cartilagineum</i> .	
7	<i>L. cartilagineum</i> (J.mayer) Thell. Subsp. <i>pumilum</i> (Boiss. & Bal.) Hedge.	
8	<i>L. latifolium</i> L.	
9	<i>L. persicum</i> Boiss. Subsp. <i>persicum</i> .	
Rorippa		
1	<i>R. amphibia</i> (L.) Besser.	
2	<i>R. cowardice</i> (Boiss. & Hausskn.) Hedge.	
3	<i>R. sylvestris</i> (L.) Besser.	
Cucumis		
1	<i>C. prophetarum</i> L.	
2	<i>C. melo</i> L.	
Citrullus		
1	<i>C. colocynthis</i> .	
2	<i>C. lanatus</i> .	
Diospyras		
1	<i>D. lotus</i> L.	
Corylus		
1	<i>C. avellana</i> L.	
2	<i>C. columa</i> L.	
Juglans		
1	<i>J. regia</i> L.	
Melia		
1	<i>M. azedarach</i> L.	
Mentha		
1	<i>M. aquatica</i> L.	
2	<i>M. longifolia</i> (L.) Hudson.	
3	<i>M. longifolia</i> (L.) Hudson var. <i>asiatica</i> (Boiss.) Rech.f.	
4	<i>M. longifolia</i> (L.) Hudson var. <i>amphilema</i> Briquet ex Rech.f.	
5	<i>M. longifolia</i> (L.) Hudson var. <i>chlorodictya</i> Rech.f.	
6	<i>M. longifolia</i> (L.) Hudson var. <i>kermanensis</i> Rech.f.	
7	<i>M. longifolia</i> (L.) Hudson var. <i>calliantha</i> (Stapf) Briquet.	
8	<i>M. longifolia</i> (L.) Hudson var. <i>kotschyana</i> (Boiss.) Briquet.	
9	<i>M. longifolia</i> (L.) Hudson va. <i>petiolata</i> Boiss.	
10	<i>M. spicata</i> L.	
11	<i>M. pulegium</i> L.	
Ocimum		
1	<i>O. basilicum</i> L.	

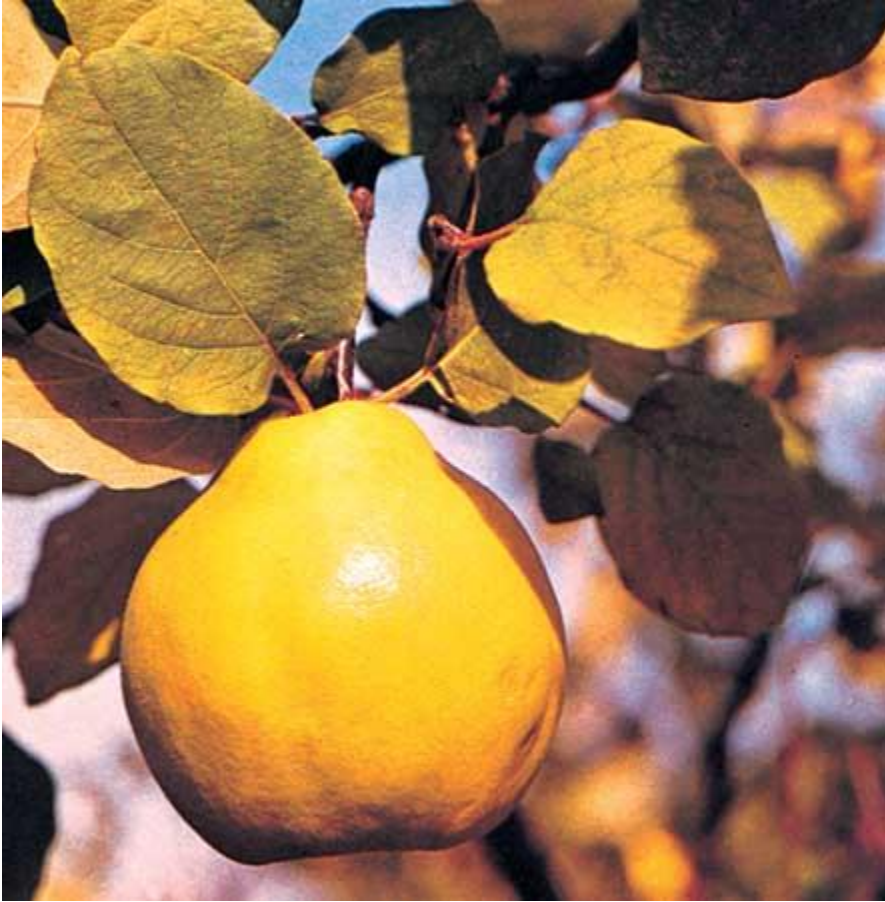


Lepidium aucheri Boiss.

Taxonomic Serial No.: 503373

Kingdom	Plantae – Planta, plantes, plants, Vegetal
Subkingdom	Tracheobionta – vascular plants
Division	Magnoliophyta – angiospermes, angiosperms, flowering plants, phanérogames, plantes à fleurs, plantes à fruits
Class	Magnoliopsida – dicots, dicotylédones, dicotyledons
Subclass	Rosidae
Order	Brassicales
Family	Brassicaceae – crucifers, moutardes, mustards
Genus	Lepidium L. – pepperweed
Species	<i>Lepidium aucheri</i> Boiss. – Aucher's pepperwort

<i>Lepidium aucheri</i> Boiss. Taxonomic Serial No.: 503373	
Kingdom	Plantae – Planta, plantes, plants, Vegetal
Subkingdom	Tracheobionta – vascular plants
Division	Magnoliophyta – angiospermes, angiosperms, flowering plants, phanérogames, plantes à fleurs, plantes à fruits
Class	Magnoliopsida – dicots, dicotylédones, dicotyledons
Subclass	Rosidae
Order	Brassicales
Family	Brassicaceae – crucifers, moutardes, mustards
Genus	Lepidium L. – pepperweed
Species	<i>Lepidium aucheri</i> Boiss. – Aucher's pepperwort



Quince: *Cydonia oblonga*. The quince is now the only member of the genus *Cydonia*, the three shrubby quinces previously included are now classified in *Chaenomeles*. Quince has previously been classified as *Pyrus cydonia* and *Cydonia vulgaris*.



The **apricot**, *Prunus armeniaca*, is a species of *Prunus*, classified with the plum in the subgenus *Prunus*. The native range is somewhat uncertain due to its extensive prehistoric cultivation.



Pl.95. Pêcher commun. *Persica vulgaris* Mill.

Prunus persica (L.) Batsch, syn. *Persica vulgaris* Mill.



Fruit native to Iran

Scientific classification

Kingdom: Plantae

(unranked): Angiosperms

(unranked): Eudicots

(unranked): Rosids

Order: Myrtales

Family: Lythraceae

Genus: Punica

Species: P. granatum

Binomial name: Punica granatum L.

Synonyms: Punica malus Linnaeus, 1758

Fruit tree genetic resources accessions of Iran (National Plant Gene Bank of Iran, 2009):

Fruit tree	No. accessions
Pomegranate	760
Almond	477
Stone fruits	529
Apple & pear	666
Grape	800
Citrus	234
Pistachio	240
Date palm	244
Walnut	1065
Olive	520
Fig	140
Hazelnut	250
Other	250
Total	6500

The main tree and other forest plant species actively managed for human utilization in the country is provided in Table 5.

Table 5. Forest species currently used in your country; for each species please indicate (N or E) whether native or exotic (using the codes for uses listed below).

Species (Scientific name)	Native (N) or Exotic (E)	Current uses (code)	If managed, type of management system (e.g. natural forest, plantation, agroforestry)	Area managed if known (ha)
در حوزه خزری (Hyrcanian)				
Fagus orientalis,	N	Solid wood products	Forestry program	1.6 Million ha.
Carpinus betulus,	N	Solid wood products	Forestry program	1.6 Million ha.
Acer velutinum,	N	Solid wood products	Forestry program	1.6 Million ha.
Quercus castaneifolia,	N	Solid wood products	Forestry program	1.6 Million ha.
Quercus marcanthera,	N	Solid wood products		
Carpinus orientalis,	N	Solid wood products		
Acer campestre,	N	Solid wood products		
Ulmus glabra				
Cerasus avium				
Sorbus torminalis				
Tilia begonifolia				
Alnus subcordata				
Parrotia persica				
در حوزه زاگرس (Zagros)				
Quercus infectoria,	N	Solid wood products		
Quercus libani,	N	Solid wood products		
Quercus brantii,	N	Solid wood products		
Cetis caucasica,	N	Solid wood products		
Amygdalus scoparia,	N	Non wood forest products		

<i>Pistacia atlantica</i>	N	Non wood forest products		
<i>Pistacia khinjuk</i> ,	N	Non wood forest products		
در حوزه جنوب ایران (South of Iran)				
<i>Avicina officinalis</i> ,	N	Economic, social and cultural importance; Mangrove habitat &		
<i>Rizophora mucronata</i> ,	N	Economic, social and cultural importance; Mangrove habitat &		
<i>Acacia nilotica</i> ,		Non wood forest products		
<i>Prosopis spicigera</i> ,				
<i>Ziziphus spina-christi</i> ,				

*Current use:

1 Solid wood products

2 Pulp and paper

3 Energy (fuel)

4 Non wood forest products (food, fodder, medicine, etc.)

5 Used in agroforestry systems

6 Other (please specify)_____

Status of important Forest species (Taeb, 1995):

Important tree species	Volume million cubic meter	volume percent
<i>Fagus orientalis</i>	132	32.7
<i>Carpinus betulus</i>	126.2	31.2
<i>Quercus castaneifolia</i>	34.2	8.5
<i>Alnus subcordata</i>	30.6	7.6
<i>Acer velutinum</i>	26.5	6.5
<i>Tilia begonifolia</i>	11.5	2.8

<i>Diospyrus lotus</i>	6	1.5
<i>Parrotia persica</i>	15.8	3.9
Other high quality species	15.1	3.8
Other low quality species	6.6	1.6
Total	405	100

The main forest tree or other woody plant species actively managed or identified for environmental services in the country is provided in Table 6.

Table 6. Main tree and other woody forest species providing environmental services or social values. For each species please indicate (N or E) whether native or exotic.

Species (scientific name)	Native (N) or Exotic (E)	Environmental service or social value (code)
در حوزه خزری (Hyrcanian)		
<i>Buxus hyrcanus</i>		
<i>Parrotia persica</i>		
<i>Gleditschia caspica</i>		
<i>Acer platanoides</i>		
<i>Alnus glutinosa</i>		
<i>Pterocarya fraxinifolia</i>		
<i>Populus caspica</i>		
<i>Acer velutinum</i>		
در حوزه زاگرس (Zagros)		
<i>Quercus</i> spp.		
<i>Pistacia</i> spp.		
<i>Acer monspessulanum</i>		
<i>Amygdalus</i> spp.		
در حوزه جنوب ایران (South of Iran)		
<i>Ziziphus spina-christi</i>		
<i>Ziziphus nummularia</i>		
<i>Ficus bengalensis</i>		
<i>Ficus religiosa</i>		
<i>Prosopis cineraria</i>		
<i>Acacia nilotica</i>		

Species (scientific name)	Native (N) or Exotic (E)	Environmental service or social value (code)
<i>Pinus</i>		Urban Plantation – park
<i>Cupressus</i>		Urban Plantation – park

<i>Fraxinus</i>		Urban Plantation – park
<i>Robinia</i>		Urban Plantation – park
<i>Acacia</i>		Urban Plantation – park
<i>Platanus</i>		Urban Plantation – park
<i>Ulmus</i>		Urban Plantation – park

Services and values include:

- 1 Soil and water conservation including watershed management
- 2 Soil fertility
- 3 Biodiversity conservation
- 4 Cultural values
- 5 Aesthetic values
- 6 Religious values
- 7 Other (please specify) _____

In order to conserve existing biodiversity of the country, representative samples of the nature of land have been selected and are being conserved under different categories such as protected areas, national parks, wildlife refuges and national natural monuments.

One of the ways to promote the forest resources in Iran is to plant multipurpose tree species and poplars. The plantations are normally established in private lands and on degraded woodlands entrusted to private sector. Development of forest resources meet the need for forest products and restore degraded lands, protect biodiversity and maintain landscapes. However, it should be noted that expansion of forest resources in the private farm lands is not so successful in compared with farming and crop production. To this end, it is necessary to provide incentives such as bank loans, land transfer and even training and extension. This policy can have positive effects only through involvement of all the stakeholders who provide themselves parts of investment and protection (FRWO, 2005).

The Forest and Range Organization, together with the Research Institute of Forest and Rangeland, under the Ministry of Jihad, had responsible for the management of 64 forest reserves (Taeb M., 1995).

To preserve the existing biodiversity over the wide geographic expanse of the country, four types of areas have been designated for conservation and protection, including: National Parks, Wildlife Refuges, Protected Areas and Natural National Monuments. In 1997, the Department of the Environment (DoE) held supervision over 7,563,983 hectares of such areas (Department of Environment, 2010).

Table . Types and the Number of Protected Areas of Iran as of 2010

Types	Number	Area (hectare)	% in comparison to the whole PAs	% in comparison to the whole country
National Park	23	1,943,558	15.18	1.17

National Natural Monument	30	24,600.77	0.19	0.01
Wildlife Refuge	37	3,774,969	29.49	2.29
Protected Areas	113	7,055,266	55.12	4.28
Total	203	12,798,393.77	100	7.75

The list forest tree and other woody species (scientific name) which are endemic in Iran are provided in Table 7a.

Table 7a. List of forest tree and other woody forest species which is endemic in Iran.

Species (scientific name)	Family	Genus	Variety	Persian name
They are mentioned in several different table				

Table 7b. Table of endemics present in different phytogeographical regions and also the average number per million hectare within each region.

Phytogeographical regions	Total number of endemics	The average number of endemic per million hectares
Irano-Turanian region	1452	14
Euxino-Hyrcanian province	115	12.5
Saharo-Sindian region	52	1.14
Multi-regional endemics	108	-
Whole country	1727	10.46

Table 7c. Total number of listed taxa based on defined IUCN categories, endemics, Vulnerable (VU) and Endangered (EN) species and their families.

Family	No. of Taxa listed	No. of Endemics	Status	
			VU	EN
<i>Aceraceae</i>	2	1	-	-
<i>Amaranthaceae</i>	1	1	-	-
<i>Amaryllidaceae</i>	2	1	-	-
<i>Araceae</i>	5	2	4	-
<i>Aristolochiaceae</i>	1	1	-	-
<i>Asclepiadaceae</i>	1	1	-	-
<i>Berberidaceae</i>	1	1	1	-
<i>Betulaceae</i>	1	-	-	-
<i>Boragniaceae</i>	78	73	4	-
<i>Buxaceae</i>	1	-	-	1
<i>Caesalpineaceae</i>	1	-	1	-
<i>Campanulaceae</i>	18	17	2	-

<i>Capparidaceae</i>	4	1	1	-
<i>Caryophyllaceae</i>	112	96	9	-
<i>Celastraceae</i>	2	-	-	-
<i>Chenopodiaceae</i>	17	12	2	-
<i>Cistaceae</i>	1	-	-	-
<i>Compositae</i>	415	393	18	-
<i>Convolvulaceae</i>	16	13	1	-
<i>Cornaceae</i>	2	-	1	-
<i>Corylaceae</i>	1	-	-	-
<i>Crassulaceae</i>	8	6	-	-
<i>Cruciferae</i>	72	70	7	-
<i>Cupressaceae</i>	3	-	1	-
<i>Cyperaceae</i>	16	2	3	-
<i>Dipsaceae</i>	20	12	10	-
<i>Ephedraceae</i>	1	1	-	-
<i>Ericaceae</i>	1	-	-	-
<i>Euphorbiaceae</i>	17	15	1	-
<i>Fagaceae</i>	2	-	1	-
<i>Frankeniaceae</i>	1	1	-	-
<i>Fumariaceae</i>	8	4	1	-
<i>Geraniaceae</i>	8	1	2	-
<i>Globulariaceae</i>	1	-	-	-
<i>Gramineae</i>	85	11	2	-
<i>Guttiferae</i>	2	2	2	-
<i>Hamamelidaceae</i>	1	-	-	-
<i>Hydrocharitaceae</i>	1	-	-	-
<i>Iridaceae</i>	14	6	3	-
<i>Juglandaceae</i>	1	-	-	-
<i>Juncaceae</i>	5	-	1	-
<i>Labiatae</i>	163	129	44	5
<i>Liliaceae</i>	84	54	9	2
<i>Linaceae</i>	6	4	-	-
<i>Loranthaceae</i>	1	-	-	-
<i>Lythraceae</i>	6	-	-	-
<i>Malvaceae</i>	31	15	-	-
<i>Oleaceae</i>	6	2	-	-
<i>Onagraceae</i>	3	-	1	-
<i>Orchidaceae</i>	21	4	1	-
<i>Orobanchaceae</i>	4	4	-	-
<i>Papaveraceae</i>	8	3	-	-
<i>Papilionaceae</i>	580	394	216	9
<i>Parnassiaceae</i>	1	-	-	-
<i>Plantaginaceae</i>	5	1	2	-
<i>Plumbaginaceae</i>	74	64	-	-
<i>Polygalaceae</i>	3	1	-	-

<i>Aquilaria malaccensis</i> (Lign-aloes)					Vulnerable A1cd	needs updating		
<i>Avicennia marina</i> (Gray Mangrove)					Least Concern	Pop. trend: decreasing		
<i>Celtis caucasica</i>					Least Concern			
<i>Cupressus sempervirens</i> (Italian Cypress)					Lower Risk/near threatened	needs updating		
<i>Cyperus rotundus</i>					Least Concern	Pop. trend: unknown		
<i>Diospyros lotus</i>					Least Concern			
<i>Ficus carica</i>					Least Concern			
<i>Juniperus communis</i>					Lower Risk/least concern	needs updating		
<i>Juniperus excelsa</i>					Lower Risk/least concern	needs updating		
<i>Juniperus oxycedrus</i>					Lower Risk/least concern	needs updating		
<i>Malacocarpus crithmifolius</i>					Data Deficient	Pop. trend: unknown		
<i>Pinus brutia</i> var. <i>eldarica</i> (Afganistan Pine)					Data Deficient	Pop. trend: unknown		
<i>Pistacia vera</i>					Near Threatened	Pop. trend: decreasing		
<i>Platanus orientalis</i>					Lower Risk/least concern	needs updating		

	in your country if known	hectare, if known	that is in your country (%)	(W), rare (R), or local (L)				
Buxus hyrcanus	–	–	–	–	–	–	–	–
Sorbus torminalis	–	–	–	–	–	–	–	–
Cerasus avium	–	–	–	–	–	–	–	–
Taxus baccata	–	–	–	–	–	–	–	–
Acacia nilotica	–	–	–	–	–	–	–	–

Type of threat:

- 1 Forest cover reduction and degradation
- 2 Forest ecosystem diversity reduction and degradation
- 3 Unsustainable logging
- 4 Management intensification
- 5 Competition for land use
- 6 Urbanization
- 7 Habitat fragmentation
- 8 Uncontrolled introduction of alien species
- 9 Acidification of soil and water
- 10 Pollutant emissions
- 11 Pests and diseases
- 12 Forest fires
- 13 Drought and desertification
- 14 Rising sea level
- 15 Other (please specify)

*Refer to species range maps where they exist to estimate the area in hectares of the species' natural range that is within the borders of your country.

**Considering the full extent of the species' natural range, which proportion is within the borders of your country? For example, an endemic species is 100% within your country. A species that is naturally distributed over approximately equal areas of your country and a neighbouring country is 50%.

***Threat categories: High – threatened throughout species range within the country; Medium – threatened in at least 50% of range within country; Low – threatened in less than 50% of range within country.

Threaten, and Endangered Forest Species (Taeb, 1995):

Forest ecosystem	Scientific name
Caspian	<i>Castanea sativa</i> , <i>Juniperus communis</i> var. <i>depressa</i> , <i>J. sabina</i> , <i>Cercis</i>

Forests	<i>siliquasterum, Taxus baccata, Corylus colurna, C. avellana.</i>
Arassbaran Forests	<i>Juniperus foetidissima, Sorbus torninalis, Cotinus coggyria, Spirea crenata, Viburnum lantana, Pyrus salicifolia, Surbus graeca.</i>
Zagross Forests	<i>Anagyris foetida, Ziziphus vulgaris, Sorbus luristanica, Fraxinus syriaca, Mespillus germanica.</i>
Scattered Forests	<i>Zygophyllum atriplicoides, Calligonum comosum, Pistacia spp., Juniperus polycarpus.</i>
Khalidjo Omani Forests	<i>Prosopis spicigera, Ziziphus numularia, Ziziphus spina_christi, Grewia sp., Salvadora oleides, S.persica, Capparis decidua, Acacia nilotica, A. seyal.</i>

A preliminary survey of endemic, rare and endangered plant species under the topic of “**Red Data Book of Iran**” has been published in year 1999 (Jalili and Jamzad, 1999).

There are some research projects to consider vulnerability of plant species, but there is not a regular assessment of threatened species in the country.

The following list of the tree species for which there is insufficient information to determine whether or not they are threatened.

Table 7c: The list of the tree species for which there is not sufficient information to determine whether or not they are threatened

Scientific name	Persian name	Region/ provinces	Note
There different species with various needs / sufficient or rare data depends on the objective of work			

In I.R. of Iran there is a system in the ministry of Agriculture (Jahade- Keshavarzi) (Different institutes: Research Institute of Forests and Rangelands, and Plant Preservation Institute) for documenting forest reproductive material.

The current state of forest reproductive material (native and exotic) identification (seed sources, provenance zones) and utilization (including vegetatively propagated material) in the I.R. of Iran are provided in Table 8a and Table 8b.

Table 8:

Table 8a. Annual quantity of seeds produced and current state of identification of forest reproductive material of the main forest tree and other woody species in the country.

Species		Total quantity of seeds used (Kg)	Quantity of seeds from documented sources (provenance/ delimited seed zones)	Quantity of seeds from tested provenances (provenance trials established and evaluated)	Quantity that is genetically improved (from seed orchards)
Scientific name	Native (N) or Exotic(E)				
RIFR					
There is not any program to produce seeds/ they collect seeds from forest to keep in gene bank or other research group for their study	--	--	--	--	--
SPII					
They do not work directly on forest species seeds/ but they do cooperate on related issue	--	--	--	--	--
IRIPP					
They do not work directly on forest species seeds/ but they do cooperate on related issue	--	--	--	--	--

Species and clones of poplars at RIFR include (Taeb, 1995):

Species	colone native	colone exotic	Colone total
<i>Populus caspica</i>	1	-	1
<i>P. euphratica</i>	1	-	1
<i>P.nigra</i>	4	11	15
<i>P.alba</i>	9	3	12
<i>P.deltoides</i>	-	9	9
<i>P.euramericana</i>	-	19	19
<i>P.termula</i>	-	1	1
<i>P.ciliata</i>	-	1	1
<i>P.candicans</i>	-	1	1
<i>P.suaveolens</i>	-	1	1
<i>P.simonii</i>	-	1	1
<i>P.tricocarpa</i>	-	1	1
<i>P.jacki</i>		-	1

<i>P.generosa</i>	-	1	1
<i>P.maximowiczii</i>	-	1	1
<i>P.szchonica</i>	-	1	1
<i>P.yunanensis</i>	-	1	1
Total	15	53	68

Isfahan Station (RIFR):

Species	colone native	colone exotic	total colone
<i>Populus alba</i>	8	5	13
<i>P.nigra</i>	10	8	18
<i>P.deltoides</i>	-	5	5
<i>P.euramerican</i>	-	10	10
<i>P.tricocarpa</i>	-	1	1
<i>P.ciliata</i>	-	1	1
<i>P.suaveolens</i>	-	1	1
<i>P.simonii</i>	-	1	1
<i>P.candicans</i>	-	1	1
Total	18	33	51

Kermanshah Station (RIFR):

Species	colone native	colone exotic	colone total
<i>Populus alba</i>	5	-	5
<i>P.nigra</i>	15	10	25
<i>P.deltoides</i>	-	6	6
<i>P.euramerican</i>	-	12	12
<i>P.tricocarpa-</i>	1	1	
<i>P.ciliata</i>	-	1	1
<i>P.suaveolens</i>	-	1	1
<i>P.simonii</i>	-	1	1
<i>P.candicans</i>	-	1	1
Total	20	33	53

Gilan Station (RIFR):

Species	colone native	colone esotic	colone total
<i>Populus caspica</i>	4	-	4
<i>P.nigra</i>	5	7	12
<i>P.deltoides</i>	-	7	7
<i>P.euramerican</i>	-	15	15
<i>P.tricocarpa</i>	-	1	1
<i>P.ciliata</i>	-	1	1
<i>P.suaveolens</i>	-	1	1
<i>P.candicans</i>	-	1	1
<i>P.simonii</i>	-	1	1
Total	9	34	43

Oromieh Station (RIFR):

Species	colone native	colone exotic	colone total
<i>P.nigra</i>	9	12	21
<i>P.alba</i>	5	7	12
<i>P.deltoides</i>	-	5	5
<i>P.euramerican</i>	-	3	3
<i>P.simonii</i>	-	1	1
Total	14	28	42

List of available germplasm (seeds and live plant) in NPGBI (1995) and their conservation type (Taeb M., 1995).

Crop	N° of acces.	Type of material	Type of conserv.
Wheat	14,827	seed	LT & ST
Barley	6,636	seed	LT & ST
Rice	2,312	seed	LT & ST
Chickpea	5,459	seed	LT & ST
Lentil	2,020	seed	LT & ST
Beans	1,549	seed	LT & ST
Forage	2,144	seed	LT & ST
Cucurbits	1,511	seed	LT & ST
Leaf Vegetables	484	seed	LT & ST
Fruit Vegetables	427	seed	LT & ST
Root & Tuber crops	1,281	seed	LT & ST
Industrial crops	1,281	seed	LT & ST
Seed Fruits	306	live plant	Field bank
Stone Fruits	432	live plant	Field bank
Pomegranates	760	live plant	Field Bank
Grapes	391	live plant	Field Bank
Citrus	211	live plant	Field Bank
Almonds	229	live plant	Field Bank
Date palm	102	live plant	Field Bank
Pistachios	300	live plant	Field Bank
Other agri. crops	489	seed	LT & ST
Other hort. crops	125	live plant	Field Bank

LT = Long term storage at -20 C

ST = Short term storage at 0 -4 C

Table 8b. Annual number of seedlings (or vegetative propagules) planted and the state of identification of the reproductive material used for the main forest tree and other woody species in the country.

Species	Native (N)	Total quantity of	Quantity of seedlings	Quantity of seedlings	Quantity of vegetative	Quantity of seedlings
Scientific name						

	or Exotic (E)	seedlings planted	from documented sources (provenance/ delimited seed zones)	gs from tested provenances (provenance trials established and evaluated)	tive reproductive material used	ngs that are genetically improved
RIFR						
All seedlings (or vegetative propagules) planted in redsearch projects and in pilot research program. Identification of the reproductive material used for the main forest tree and other woody species normaly take place in advance of commencing research projects.	—	—	—	—	—	—
SPII						
They do not work dierectly on forest species seeds/ but they do cooperate on related issue	—	—	—	—	—	—
IRIPP						
They do not work dierectly on forest species seeds/ but they do cooperate on related issue	—	—	—	—	—	—

The current state of genetic characterization of the main forest tree and other woody plant species in the Iran according to the available information is provided in Table 9.

Table 9. List forest species for which genetic variability has been evaluated and check each column that applies. Begin with species mentioned in Tables 5 and 6.

Species		Morphological traits	Adaptive and production characters assessed	Molecular characterization
Scientific name	Native (N) or exotic (E)			
Fagus orientalis				

Chapter 2: The State of *in situ* Genetic Conservation (Table 10)

Collection of different information on the status of forest genetic resources is part of regular duty of Gene Bank (RIFR- I.R. of Iran) as part of national forest surveys.

In Iran developing genetic conservation strategies/programmes (including *in situ* and/or *ex situ*) for specific forest tree or other woody plant species, always was a concern of decision maker in RIFR, and different activities on institute, *ex situ* and *in vivo* has taken place by running various research project on above mention issue, but there is a approved action programme and strategy on the issue.

Biodiversity and *in situ* conservation has become an issue as about 1992 in Iran and it was in a planning phase in year 1995. However, a collection of more than 800 land races of pomegranate was available in the form of field gene bank at Yazd and Saveh, which were managed by the NPGBI representatives at the site (Taeb M., 1995).

Available information on the programme for *in situ* conservation of forest genetic resources in Iran is provided in Table 10.

Table 10. Target forest species included within *in situ* conservation programmes/units.

Species (scientific name)	Purpose for establishing conservation unit	Number of populations or stands conserved	Total Area
<i>Fagus orientalis</i>			
<i>Quercus castanifolia</i>			

The main constraints to improving *in situ* genetic conservation programmes in Iran are: inadequate knowledge, lack of information, competing use for available land, lack of government resources, lack of public interest, and unsustainable exploitation of resources.

The priorities for future *in situ* conservation actions in Iran are research enhancement, capacity-building by different training of expert and decision makers.

Chapter 3: The State of *ex situ* Genetic Conservation (Table 11)

Prior to the establishment of the NPGBI, some collection activities had been done, mainly in cereals in 1948. Some parts of these collections were available at Tehran and Shiraz universities (1995). But, only after the establishment of the NPGBI the systematic collection, evaluation and conservation of plant genetic resources were started (Taeb M., 1995).

One of forest strategies in Iran is to conserve biological diversity. Conservation of biodiversity is carried out by FRWO in cooperation with Department of Environment. The conservation approach considers *in situ* protection of rare species. In 2000, 10

percent of the forests were designated as protected areas in addition to forest areas already assigned to and managed by Department of Environment as national parks, as well as biosphere and forest reserves. Besides, FRWO directly manages several reserves in various regions of the country of unique and rare plant species and set the criteria and methodology for their assessment and monitoring. It is note worthy that the biological diversity standards are formulated and performed in national and regional forest Management plans. Recently, conservation of fragile ecosystems in dry, sub-dry and sub-humid areas is specifically taken into consideration and restoration of these ecosystems is given high priority in executive programmes. For instance, some degraded mangrove forests are rehabilitated in recent years (FRWO, 2005).

The list of the target forest species included in *ex situ* conservation programmes/units in I.R. of Iran, and information on the species and material in germplasm banks is provide in Table 11.

Table 11 *Ex situ* conservation

Species		Field collections				Germplasm bank			
Scientific name	Native (N) or exotic (E)	Collections, provenance or progeny tests, arboreta or conservation stands		Clone banks,		<i>In vitro</i> (including cryo conservation)		Seed banks	
		No. stands	No. acc.	No. banks	No. clones	No. banks	No. acc.	No. banks	No. acc.
Near all forest tree seeds are kept in RIFR Gene Bank									

The main constraints to improving *ex situ* conservation in Iran are: difficulty in field tests, insufficient of resources, and too many species seeds to be tested.

The priorities for future *ex situ* conservation actions are preparation of action plan for enhancing research, capacity-building and infrastructure for seed labs and genebanks.

A: List of available forest seed samples in Gene Bank in RIFR:

(طی نامه شماره 301 / د مورخ 16 - 1 - 1391 بانک ژن) (reference letter date 4 April 2012:

Total seed sample: 2400

Number of species: 235

Number of genus: 98

B: List of genus and species of forest trees (*ex situ* Conservation):

Accession number	Species number	Genus scientific name	Genus Persian name	row
197	18	<i>Cupressus</i>	سرو	1
416	15	<i>Amygdalus</i>	ارژن	2
53	10	<i>Rosa</i>	گل سرخ	3
59	9	<i>Acacia</i>	آکاسیا	4
54	9	<i>Cotoneaster</i>	شیرخشت	5
20	8	<i>Pinus</i>	کاج	6
128	5	<i>Acer</i>	افرا	7
103	5	<i>Cerasus</i>	آلبالو، گیلاس	8
36	5	<i>Fraxinus</i>	زبان گنجشک،	9
45	5	<i>Juniperus</i>	ارس	10
34	5	<i>Prosopis</i>	کهور	11
20	5	<i>Rhamnus</i>	سیاه تنگرس	12
24	4	<i>Eucalyptus</i>	اوکالیپتوس	13
27	2	<i>Cercis</i>	ارغوان	14
173	4	<i>Pistacia</i>	بنه	15
7	4	<i>Prunus</i>	گوجه، آلوچه	16
6	4	<i>Pyrus</i>	امرود، گلابی	17
31	4	<i>Sorbus</i>	تیس، بارانک	18
54	4	<i>Ziziphus</i>	کنار	19
14	3	<i>Berberis</i>	زرشک	20
48	3	<i>Buxus</i>	شمشاد	21
41	3	<i>Celtis</i>		22
12	3	<i>Lonicera</i>	پلاخور	23
16	3	<i>Tilia</i>	نمدار	24
6	2	<i>Abutilon</i>	ابوتیلون	25
8	2	<i>Albizzia</i>	شب حسب	26
6	2	<i>Alnus</i>	توسکا	27
20	2	<i>Carpinus</i>	ممرز	28
15	2	<i>Cornus</i>	غال اخته، ال	29
20	2	<i>Daphne</i>	دافنه	30

Accession number	Species number	Genus scientific name	Genus Persian name	row
20	2	<i>Ficus</i>	انجیر	31
10	2	<i>Haloxylon</i>	تاغ	32
18	2	<i>Melia</i>	زیتون تلخ	33
5	2	<i>Moringa</i>	گزر روغنی	34
5	2	<i>Picea</i>	نوئل	35
7	2	<i>Platanus</i>	چنار	36
21	2	<i>Rhus</i>	سماق	37
18	2	<i>Ulmus</i>	نارون	38
51	2	<i>Vitex</i>	پنج انگشت	39
13	2	<i>Zygodphyllum</i>	قیچ	40
5	1	<i>Ailanthus</i>	عرعر	41
7	1	<i>Colutea</i>		42
9	1	<i>Terminalia</i>	آرجون	43
17	1	<i>Cordia</i>	سه پستان	44
5	1	<i>Diospyros</i>	خرمالو	45
12	1	<i>Dodonaea</i>	ناترک	46
7	1	<i>Fagus</i>	راش	47
5	1	<i>Gleditschia</i>	لیلکی	48
14	1	<i>Lawsonia</i>	حنا	49
7	1	<i>Leucaena</i>	سوبابیل	50
8	1	<i>Mespilus</i>	ازگیل	51
26	1	<i>Myrtus</i>	مورد	52
9	1	<i>Nitraria</i>	قره داغ	53
17	1	<i>Olea</i>	زیتون	54
43	1	<i>Paliurus</i>	سیاه تلو	55
7	1	<i>Parkinsonia</i>	درمان عقرب	56
11	1	<i>Periploca</i>	گیشتر، گیشدر	57
7	1	<i>Robinia</i>	اقاقیا	58

Chapter 4: The State of Use and Sustainable Management of Forest Genetic Resources (Tables 12, 13, 14, 15, and 16)

There are an old system for internationally transfer and exchange of seed between RIFR and other organizations around the world for the research purposes. Botany research division is responsible body in RIFR.

Table 12. Seed and vegetative propagules transferred internationally per annum (average of last 5 years).

Species		Quantity of seed (Kg)		Number of vegetative propagules		Number of seedlings		Purpose
Scientific name	Native (N) or Exotic (E)?	Import	Export	Import	Export	Import	Export	
Department of Botany in RIFR has seeds exchange program with more than 350 botanical gardens or research centre around the world. The list is publish and update annually. It is not commercial.		√	√					research
FRWO sometimes imports seeds (normally rangelands species not forest) for seeding or seedling plantation.								implem entation



Research Institute of Forest and Rangelands (RIFR) is a mother Institute for all relate issue on forest and foresty research activities in the country.

Any planning concerning environmental and conservation issues requires a sound scientific foundation to base policy decisions at both national and local levels. Thus, research programs constantly need to respond to these requirements and to undertake the appropriate studies on natural resources such as water, soil, and vegetation. The natural resources and preventing their destruction similarly requires a sound understanding of the natural environment in order to ensure their preservation and ultimately their sustainable utilization. It is also important that a framework for comprehensive and long-term planning with regard to environmental and conservation issues be developed which takes in to account the results of the research.

Based on these goals, the Research Institute of Forests and Rangelands was founded in 1968 as a national institute and with mandatory responsibilities to lead research activities on natural resources of Iran. The main areas of responsibilities of the institute are outlined below:

- 1) Forest research division: research projects are about forestry, forestecology, forest management, forest engineering, forest policies, forest economical and social issues
- 2) Rangeland research division: research projects are mainly about rangeland management, rangeland ecology and improvements in farming and also economical and social issues of rangelands.
- 3) Botany research division: this division identifies plants and vegetation of the country, it also concentrates on phytosociologic studies and provides plants population maps, identifies rare and endangered species and contributes conservation of hereditary resources. Some other activities of this division are studying biological diversity, creating and developing herbarium, establishing Botanical Garden and finally access to valuable species for utilization in industry.
- 4) Medicinal plants and by-products research division: it accumulates, identifies, plants and determine essential elements in many native species of the country.
- 5) Desert research division: it researches about land erosion, water resources, land resources, desert management and their exploitation.
- 6) Wood and paper technology research division: it studies in the field of physic and anatomy of wood and wood mechanics. Also it characterizes woods of different species in terms of their structure and best usage, and determines how Iranian wood should be sawn, dried also establishing methods for preserving different woods.
- 7) Poplar and fast growing trees research group: investigation about compatibility and determining appropriate numerals of poplar in short term period of exploitation which takes place in this division.

8) Conservation and protection of forest and rangeland research group: it investigates and studies living and nonliving factors which damages forests and rangelands, it also maintains sustainable balance and biological diversity in Iran natural resources extent. It also concentrates on biological control, forest and rangeland diseases , it's joint management for protection and conservation of different forest and rangeland ecosystems.

9) Biotechnology research group: there are four groups as plant breeding, tissue culture, molecular biology and plant genetic engineering and plant physiology. These have been formed in the division to cover all the research requirements in the mentioned fields.

10) Mechanization research group: it investigates, designs and builds forest and rangeland machines and expands mechanization methods in degenerating and enhancing precision, speed and efficiency of various practices in support of natural recourses.

11) Gene bank of natural resources: This division gathers identifies and assess and also conserve gene sources in different fields of natural resources in the country.

Since the establishment of the institute more than 2800 projects in different national and regional varieties have been conducted. 1300 projects have been completed up to now. University professors and students have continuous contribution with us. More than 300 M. A and Ph.D Theses from inside and outside Iran have been under conduction.

In applying, transferring and promoting the obtained research projects, we can claim that all the final results are valuable in different ways for conducting in education, management and promoting experts. Among all research projects 65 percent were efficient and 35 percent were fundamental.

Expanding development and transferring different research projects are carried out through various ways, such as publication of 420 books and particular journals, publication of 7 journals and special magazines, comply and publish more than 900 scientific papers (English/ Farsi) since 1999-2003. On the other hand so many different conferences, forums and lectures were presented in these years.

Nowadays, we can claim that there are no interested groups in natural resources and environment in the country that are not familiar with results and outcomes of research projects and publications in this field. Forest and Rangeland Research Institute with more than 36 years of scientific existence, today is responsible and conductor of research studies in different fields of natural resources.



Forest Research Division is main research body which has responsibility of forest research activities in the country. The guidances for the research centres in provinces on forest and forerstry research also s on its duty.

Forest Research Division (FRD) has started to undertake research projects since the foundation of Research Institute of Forests and Rangelands (RIFR) in 1968. Taking into account that Iran is a low forest cover country (LFCC), the primary activities were concentrated on adaptation and elimination trials using 330 different fast growing exotic (needle-leaved and broad-leaved) tree species and provenances in different ecological regions of the country.

At the present time, considering the ecological regions, the strategy of our studies is based on ecosystem approach. With new trends in the country and the world, FRD is dealing with sustainable forest management, close to nature silviculture, rehabilitation of degraded forests areas by using different reforestation methods as well as afforestation methods in non-forested areas, in order to decrease the pressure on natural forests and producing wood out of forest areas.

Sub-divisions:

- 1- Forest Ecology and Forest Science
- 2- Forest Management and Biometry Research Group
- 3- Forest Plantation and Tree Breeding Research Group
- 4- Forest Soil Research Group
- 5- Socio-Economic Issues and Forest Utilization Research Division

Also in the international framework of forest research division, a group called "Beech Research Group" is established and has cooperation with IUFRO.

Forest Ecology and Silviculture Research Group

The main strategy of this research group is based on close to nature Silviculture and treatment of forest trees and stands, taking into account their natural structure and requirements .

Duties:

- * Investigations on the influence of ecological factors on presence and growth of forest tree species;
- * Study on unique forest ecosystems;
- * Application of silvicultural systems and tending operations in natural and man made forests.

Some of undergoing and completed projects within this group are:

- * Site demands of forest tree species on different ecological regions;
- * Role of ecological factors (light, temperature, moisture etc.) on establishment and growth of seedlings and tree species;
- * Study of seeding cycle in different tree species;

- * Investigation on qualitative and quantitative characteristics of natural regeneration under different condition;
- * Structure of natural forest stands;
- * Application of even-aged and uneven-aged methods in different forest stands;
- * Impact of silvicultural operations (thinning, lightening) on the quantitative and qualitative characteristics of natural and man-made stands (e.g. on beech, maple, pine and spruce plantations);
- * Study of development stages on natural undisturbed forest stands;
- * Impact of silvicultural operations in coppice stands (western oak);
- * Influence of environmental and genetic factors on the quantitative and qualitative characteristics of oriental beech;
- * Studies on long-lived trees in different parts of Iran;
- * Study the ecosystem of Mangrove forests in South Iran.

Achievements:

Among activities of this group several reports, 3 books and more than 30 articles in different scientific journals have been published which includes forest and poplar research periodical, journal of natural resources of Iran and research and Sazandegi magazine.

Forest Management and Biometry Research Group

Duties:

- * Study and investigation on different forestry techniques in quantitative production,
- * Investigation on the degree of forestry projects accomplishment,
- * Evaluation of different forest management techniques emphasizing on sustainable development and role of local communities,
- * Habitation division and determining their degree of desirability,
- * Using GIS technology in estimating growing stock in forest,
- * Creating forest species capacity tables and investigation of its application and precision,
- * Biometric studies in forest and determining the growth of essential forest species,
- * Comparing evaluation methods in forests and determining the best method based on precision and cost,
- * Method optimization in forest data collections, Study and investigation on new data collection methods in forest

Typical Research Projects:

- * Application of silvicultural operation in even-aged and uneven-aged stands in order to achieve appropriate regeneration in beech forests,
- * Allometric scaling of forest species in north Iran,
- * Optimum and regular evaluation on northern forest ecosystem by GIS,
- * Investigating upper boundary changes of forest by GIS,
- * Forestry model projects in Vaz research forest,
- * Establishing temporarily network panels in forest,
- * Investigating geostatic method in estimating growing stock in afforestation.

Achievements:

More than 10 papers and reports from the activities of this group have been published in scientific journals such as "Forest and Poplar Research Periodical", "Natural Resources of Iran Journal" and other magazine

Forest Plantation and Tree Breeding Research Group:

The main objective of Forest Plantation and Tree Breeding Group is to develop the best methods and plans for conservation of soil and water, rehabilitation of degraded forests, development of forests and increasing wood production and other forest products also sustainable use of forest genetic resources.

Duties:

- * Determination of best methods on collection time and storage of seeds and necessary treatment for planting,
- * Investigation on best methods of seedling production in nursery and plantation in forest area,
- * Investigation on adaptability and introducing various species at different ecological situations,
- * Investigation on endemic and exotic provenances,
- * Site preparation methods for plantation,
- * Determination of the best plantation systems,
- * Investigation on agro-silvo-pastoral systems,
- * Water and fertilizer requirements of trees,
- * Determination of principals for selection management of seed production area and stands,
- * Impact of biotic and a-biotic stress on resistance and tolerance of forest tree populations species,
- * Development of superior varieties (by progeny tests, hybridization and etc.),
- * Establishments of seed orchards,
- * Evaluation, conservation and advancement of genetic variability on forest trees by *in situ* and *ex situ* conservation methods.

Projects:

- * Investigation on adaptability of various species (almost 300 species and provenances) at different ecological regions.
- * National project of the pioneer afforestation in south of Iran.
- * Establishment of seed orchard (Ash and Lime in northern Iran).
- * Plantation trials with multi-purposes tree species.
- * Impact of afforestation on restoration of damaged forest ecosystems by Kuwait burning oil wells.
- * Application of swage in forest plantation.
- * Impact of different light and hormonal treatments on sexual and asexual regeneration of juniper.

- * Genetic diversity and differentiation of oriental beech (*Fagus orientalis* Lipsky) populations as the basis for development of silvicultural and gene conservation strategy in Iran.
- * Gene flow among Oriental beech (*Fagus orientalis* Lipsky) populations.
- * Effects of genetic characteristics on form of beech tree.

Achievements:

In this group many reports and more than 20 papers in scientific journals and magazines have been published.

Forest Soil Research Group:

The Forest Soil Research Group is responsible for conducting all research programs which are anyway related to forest soils.

Duties:

- * Investigation on forest soil types identification and mapping
- * Investigation on relationship between soil and forest types and their interactions
- * Investigation on the effects of soil properties (texture, moisture, compaction,...) on establishment of forest trees seedlings
- * Investigation on soil biology of forest lands
- * Investigating the effects of forest plantation on soil properties
- * Investigation on nutrition demands of different forest tree species
- * Investigation on forest nursery soil requirements (productivity and physical-chemical properties).

Projects:

- * Identification and mapping soil types of Vaz Forest
- * Nutritional demands of Caspian forest nurseries
- * Effects of different Eucalypt species on ground vegetation and soil physical, chemical and productivity properties.

Achievements:

Among all activities of this group there are many reports and more than 10 articles published in scientific- research magazines including the Quarterly Iranian Journal of Forest and Polar Research (IJFPR).

Socio-Economic Issues and Forest Utilization Research Division:

Duties:

- * Investigation and study social and economical structure and their role in natural resources destruction,
- * Investigating various methods of human cooperation in conservation issue,
- * Utilization and development of forest resources,

- * Investigating the effects of livestock and human invasion on forest vegetation structure and transformations,
- * Investigation on the fuel wood replacing method and its effect with other energy sources,
- * Economical investigation of different techniques of seed and seedling production and plantation in site,
- * Investigation on the improvement techniques of forest trees utilization,
- * Investigation on best utilization methods in natural and man made forests,
- * Investigating damages caused by silvicultural methods,

Investigation and determining the best utilization methods in silviculture,

- * Investigating the turnover in utilization systems and selecting appropriate system in various condition,
- * Study the technical issues in road construction and appropriate methods for conservation and side roads stabilization .

Projects:

- * Investigation on current methods and determining the most economical way of seed collection, seedling production and transformation to sites of essential broadleaved species in northern forests.
- * Designing Socio-economical pattern of Vaz research forest.
- * Determining effective factors on implementing natural resources projects in Research Institute of Forest and Rangelands.
- * Investigating the effects of managing forest livestock decline program and cloning forest inhabitants in sustainable development of Abrize Astrachay basin.
- * Investigating effective parameters in Zagros natural resources management.
- * Soil survey for wood transport by GIS system in Vaz research forest.
- * Research project on natural resources optimum management in Caspian Sea watershed area.
- * Investigating potential facilities in order to develop interior villages in Vaz research forest focusing on pressure decrease on natural resources lands .
- * A study on road transportation network of forest products and selecting proper machinery in Vaz research forest

Activities:

The existence of 12.4 million hectares of forest lands with 3 cubic meter annual growth in northern part and 0.5 cubic meter hectares in western part has put Iran among those countries with low forest cover. Nevertheless, with these limited resources and because of

increase in population and extension of rural and urban areas and changing the lands to farm lands, livestock grazing and over exploitation forests are causing serious problem. In order to reach to optimal management and qualitative and quantitative forest production, applied and basic research is necessary throughout Iran forests.

The main activities of this division are:

- * Investigation on different useful forest management and socio- economical studies in order to accomplish development;
- * Ecological research in forests and recognition of stand requirements , tree and shrub forest species;
- * Research on forest science and forest development in different ecological areas;
- * Investigation on structure, dynamic and forest plantation;
- * Artificial and natural rehabilitation methods of degraded forests;
- * Forest biometric research;
- * Study on various methods of producing seedling and afforestation in ecological parts of Iran;
- * Identifying different forest genotypes and ecotypes;
- * Research on typology and biology of forest soil;
- * Research on forest engineering

Poplar research group:

Poplar & Fast Growing Trees Research Group organized in 1987 to carry out basic and applied research in various aspects like many other countries, Including:

- Studies on the conservation of poplar and willows genetic recourses.
- Identification of natural sites of poplar and willows in Iran.
- Genetic improvement of poplar trees by using hybridization.
- Agroforestry research such as combining poplar cultivation system and agriculture (Intercropping) and Utilization of poplar biomass as fodder.
- Comparison of different poplar clones at different geographical conditions for introduction of appropriate clones.
- Determination of appropriate poplar clones in short rotation systems.
- Production of poplar, by using tissue culture technique.
- Collection and Identification of willow species.
- Genetic diversity and Identity of poplar clones using molecular markers such as RAPD & SSR.

The group has required experts and facilities to carry out numerous projects, performing a great number of applied projects during a period of its life. The group has achieved remarkable successes.

The research on Populus species carried out in 16 Stations of 3 different climatic and edaphic parts of Iran.

Fagus orientalis							
Quercus castanifolia							
Populus nigra							

* MP: Multipurpose tree improvement program

**NWFP: Non-wood forest product

Research on native and exotic species and clones of poplars is vastly conducted in RIFR . In this regard, native cultivars are collected and planted in research stations. These collections are further used as germplasm for various research activities (Taeb, 1995).

Table 14. Tree improvement trials.

Species		Plus trees*	Provenance trials		Progenies trials		Clonal testing and development			
Scientific name	Native (N) or exotic (E)	Number	No. of trials	No. of prov.	No. of trials	No. of families	No. of tests	No. of clones tested	No. of clones selected	No. of clones used
NA										

* List number of plus trees if programme is beginning and only first generation seed orchards have been established.

Table 15. Seed orchards.

Species (scientific name)	Seed orchards*		
	Number	**Generation	Area
NA			

*Seed orchards are plantations specifically planted and managed for seed production, not natural seed stands.

**Generation refers to 1st, 2nd, 3rd, etc., breeding cycle

There some information system which been established on tree breeding programmes in RIFR (Gene Bank and Biotechnology research group). The list of implemented project could be used for further activities.

The list of species which quantitavely improved for seed, pollen, scions and/or other reproductive materials can be made available, at request (Table 16).

Table 16. Type of reproductive material available.

Species (scientific	Type of material	Available for national requests only	Available for international requests

name)		Commercial	Research	Commercial	Research
variable	Cell culture		mainly		
variable	Tissue culture		mainly		
variable	cutting		mainly		

Chapter 5: The State of National Programmes, Research, Education, Training and Legislation (Tables 17, 18, and 19)

National programmes

National forest law (as Specific forest law) started in year 1967. Also National forest program started in year 1996 for implementation. National forest policy is include in five years social and economical national plans and yearly proframme. Sub-national forest policy is also include in five years social and economical national plan and yearly provincial programme.

Research institutes especially RIFR are working on the forest genetic rsources. Institutes and universities which are working on the forest genetic resources are governmental and private sectors are mainly involved on fruit tree production and plantation for fruit gardens.

Private sector involvement in planning, formulation and implementation projects is stipulated by law. Local communities, NGOs and indigenous people involve formally in the process of formulating, planning and implementing forest plans as well as forest policy forest management plans. At present forest and rangeland protection is mainly carried out with the collaboration of local communities (FRWO, 2005).

Since 1997, the following economic and policy instruments have been applied to attain sustainable forest management (FRWO, 2005):

Policy instruments

- Support participatory process in planning , implementation, monitoring and evaluation of forestry plans
- Support and encourage private sector , local communities and NGOs involvement in forestry related activities
- Promote cross- sectoral and international cooperation
- Delineate and specify the boundaries of private forest and range lands
- Organize training programmes and provide technical services to participants

Economic instruments

- Provide low-interest loans for plantation programmes particularly, multi purpose tree species
- Provide low-interest loans for forest-related cooperatives

- Eliminate tariffs on wood import
- Entrust low price lands for plantations

The list and identify the type of institutions which actively are engaged in conservation and sustainable use of forest genetic resources with their contact information is provided in Table 17.

Table 17. Institutions involved with conservation and use of forest genetic resources.

Name of Institution	Type of Institution	Activities or Programs	Contact Information
RIFR	Research		Mentioned above
SPII	Research		Mentioned below
IRIPP	Research		Mentioned below
Universities	Education		Variable

The regeneration and restoration of degraded forest areas is undertaken on the basis of forest management plans which is primarily formulated for the Caspian forests in the past decade. Restoration of degraded forests is carried out by native species and plantation of native pioneer species. The main objective of rehabilitation is to achieve ecosystem sustainability in forest area and increased biological diversity. In 1996, FRWO launched the forest management plan for sub-humid forests, mainly dominated by oak species. Restoration of these forests carried out through natural regeneration and coppice system in which plantation is done with multipurpose species. In formulation of forestry plans modern technologies such as GIS is used in cooperation with private sector. In fact, forest policy aims at capacity building of private sector, local communities as well as NGOs. Forest management plans are implemented by the government, cooperatives and private sectors which the latter will be more involved in the process in future (FRWO, 2005).

There are two genbanks, one for natural resources including forest and rangeland in Research Institute of Forest and Rangeland (RIFR) and the other on agricultural sector. RIFR are mainly coordinate for different institutions and or provincial research centres in national programme for forest genetic resources?

Gene bank research group:



Gene bank research group is working under supervision of the Botany research division in RIFR. National Botanic Garden as well as provincial botanic gardens which have valuable source of information are working with the same research division in RIFR. Botany Research Division also have highly valuable source of information as collection of herbarium.

Seed is the most and basic part of the plant that plays the role of re-growing the plant, conserving and transferring the plants genetic material. It has also basic effect on dispersion, propagation and plant viability in hard conditions. Seeds have supported the great part of the food of the human, animal and birds. In addition, the seeds have many medicinal, industrial and commercial effects in human life. Human civilization was started with seed recognition, collection, sowing and harvesting the seeds.

Although *in-situ* conservation is the best for maintaining the plant genetic resources, many difficulties such as climate changes, irregular plant use, over grazing and also natural and unnatural events pushed to *ex-situ* plant conservation. Especially this method has grate importance in conserving the plants that are in danger and extinction. Depending upon the seeds or plant material resources, they are conserved in wide range of cold temperatures that is between zero to -196 degree centigrade.

Documents have shown that natural resources gene-bank division has begun its activities since 1960 decade in Research Institute of Forest and Rangeland (RIFR). Because, the plant genetic resources conservation have most priority, especially conserving the endemic and also plants that are under extinction, RIFR decided to increase the level of the gene bank unit to Gene bank division. So, it restarts to reorganize the collection and evaluation of the range, medicinal and forest plant genetic materials.

The organization chart of the natural resources gene bank, is as follow:

- 1- Seed collection and Identification Group (SIG)
- 2- Evaluation and Regeneration Group (ERG)
- 3- Protection and Conservation Group (PCG)
- 4- Information and Data Management Unit (IDMU)

Seed collection and Identification Group (SIG) includes 3 units:

Forest plants unit - Range plants unit- Medical plants unit.

The specialists of the seed collection and Identification group with cooperation of 28 province experts are collecting the suitable seeds according the standard protocol. It is determined to collect 8000 seeds for the range and medicinal plant accessions. After seed collection, it is tried to identify the genus and species name of the plant seeds.

Evaluation and Regeneration Group (ERG) having 3 units:

Genetic and Breeding unit, Biotechnology unit, and Germplasm and Seed Regeneration unit.

Cytogenetic laboratory, which is equipped with microscope having monitor system and electrophoresis, conducts the cytogenetic evaluation and seed morphological characteristics to prepare the endemic seed color atlas. Cytogenetic laboratory tries to determine the chromosome number of the collected seeds for clearing the possibility of crossing between species.

Furthermore the mitotic, and meiotic divisions, DNA and protein electrophoresis are being carried out in this laboratory. Cytogenetical studies covered 21 genus of leguminosae family, including 65 *Onobrychis* species and one genus of grass family which included 25 *Lolium* species. Biotechnology laboratory has been equipped with tissue culture chamber and instruments. Research activities in biotechnology laboratory include:

- Propagation of the plants that their seeds not emerged or the plants showing abnormalities
- Assaying the seed health via culturing the seeds on PDA
- Studying some parts of the Nitrogen fixation processes and also mycorrhiza.

Field germplasms that are used for regeneration and Evaluation of the seeds covered 7 hectare in Alborz research center. So far (2004), 1700 accessions were regenerated or identified. Regeneration covered the seeds, which have been reduced their germination percentage or their quantity decreased by exchanging processes.

Protection and Conservation Group (PCG) has 4 units as follow:

Seed Exchange Unit, Seed Storage and Cold room Unit, Cleaning unit, and Seed Technology Unit.

In seed exchange unit, after recording all of the seed requests, if the requested seed were available in active cold room, it would be handed over to applicant. Most of the applicants are from universities, research institutes, research centers and students of different colleges. Within last seven years, the numbers of seed accessions in which presented to the colleagues were more than 1950. In this group, after receiving the seed accessions, there are given a new code number, cleaned with particular methods and then hand over to seed technology unit for different standard seed testing. After completion of mentioned processes, each seed sample would be divided in two samples and packed in aluminum and polyethylene packs. These samples will be kept in permanent and active cold rooms respectively. It is clear those less quantity seed samples, seed samples with low germination percentage, decreased seed samples following seed exchange would be in queue of regeneration. In seed technology unit, all the standard seed testing, such as moisture percentage, 1000 seed weight, germination percentage and viability would be carried out and recorded. In the case of facing with any abnormalities, different needed seed treatments would be implemented.

Information and Data Management Unit (IDMU):

Because of importance of seed information and data, in information and data management unit, these are recorded and saved in particular unit. After finishing the seed testing, all the recorded information would be given to IDMU. In this unit, all the data would be saved in such a way in which obtaining different characteristics of each plant family, genus, species or accessions with their distribution map would be possible.

So far, the number of accessions, which have been recorded, reached more than 15000. Records have shown that seed samples have been sent to applicants according their request .It includes 600 seed samples for provinces research centers, 250 for different research divisions in RIFR, 400 seed sample for universities and colleges and 700 seed

samples for our colleagues in gene bank. For being certain of safe keeping the seed information and data, back up files have been prepared.

Botany Research Division:

Botany Research Division is main research division body engage with genetic resources management.

Iran with special geographical situation, climatic and topographical features has one of the richest floras consisting of spermatophytes and pteridophytes. The determination of plant species and biodiversity, also management of natural resources is impossible without exact knowledge of plants. For this, National Botanical Garden of Iran is founded in 1968 as an independent institute. The plan was to build up a botanical garden and to do botanical studies. One year later, a herbarium was founded in the garden. Later the garden followed its activities entitled of Botanical Institute of Iran and then affiliated to the Research Institute of Forests and Rangelands as a distinct division entitled Botany Research Division.

The main objectives of Botany Research Division are: Botanical researches, exaltation of botanical knowledge and transferring of botanical finding to the public.

Botany Research Division has two Subdivisions:

1.- Herbarium

Systematic and Phylogeny of Spermatophytes Research Group

Systematic of Pteridophytes Research Group

Phytosociology and Plant Ecology Research Group

2- National Botanic Garden

Activities:

- Collection and determination of plants, development and completion of central and local herbaria of Iran
- Preparing and writing the Flora of Iran in Persian
- Identification of species with the viewpoints of pharmaceutical, industrial, landscape and etc .
- Determination of endemic, rare and endangered species of Iran and providing necessary recommendations about conservation of inheritance reserves
- Conservation of plant genetic reserves in Botanical Gardens
- Taxonomical studies, including biosystematics, micro-morphology, chemotaxonomy and molecular systematic
- Phytosociological studies and recognition of ecological effective factors in establishment of plant associations and natural formations of Iran
- Preparing of vegetation and plant associations maps in Iran

1- Herbarium

A herbarium of Iranian endemic plants is gradually being built up and it is currently consists of over 124,000 specimens. It also maintain 4,000 specimens of south west Asia and Europe (Taeb, 1995).

2- National Botanic Garden:

The garden was founded in 1968. An area of about 150 hectares was allocated to the garden where is situated by the freeway between Tehran and Karaj at an altitude of about 1320 m.

It is also planned to build up 6 more Botanical Gardens in 6 phytogeographically different provinces (Taeb, 1995). There are now 6 Botanical Gardens in different provinces which are locating in various phytogeographical districts (RIFR, 2012).

The area is flat and slopes gently to the south. The Albourz Mountains forms the background. The climate is dry with an average annual precipitation of about 240 mm falling between November and May. Temperature reaches as much as 42 – 43° C during July and August. During winter the temperature may fall to – 10° C or lower. The natural vegetation of the area is dry *Artemisia Siberia* steppe.

The garden is still under construction. Six lakes have been excavated, and filled with water. Two hills (the highest reaching 19 m), have been built up to represent the Albourz and Zagros mountains, (the largest mountain chains of Iran). A large rock garden with cliff walls and a waterfall has been completed as well as a special section for Iranian bulbous plants. Also another cliff wall with waterfall has been built up in Albourz section. Furthermore a wetland area has been designed and cultivated in this section.

A section for desert plants with sand dunes, a salt lake and a wadi have been constructed. Extensive areas have been planted with trees, one area of 5 hectares represents the Caspian Forest. Plants used in medicine are another section which has recently been established. The fruit garden has been established and cultivated. Hills representing Himalaya Mountain have been constructed and partly planted. The systematic area also has been constructed and several species have already been cultivated there.

A river about 1 km long circulating between Caspian Lake and reservoir has been constructed. Also the picnic area with some pavilions and other facilities has been prepared. The Japanese and Chinese gardens are parts of the garden which have been completed in an area about 2.5 hectares.

Arboretum is a new section in the garden which has been established in an area of 15 hectares. The path ways and a lake of about one hectare have been constructed.

The native trees and shrubs of Iran as well as exotic species are being planted in this part of the garden. The Europe, America and Caucasus sections and the central part of the garden representing a Persian garden design are simultaneously under construction.

The National Botanical Garden of Iran is planned to be the main centre for horticulture and plant taxonomy in Iran. A herbarium of Iranian plants (TARI) is gradually being built up and now consists of some 160,000 numbers. The botanical and horticultural library has more than 11,000 volumes in its shelves.

Research, Education and Training

The estimation of the budget allocated to forest genetic resource research in the country could be calculated by considering all related projects and activities in RIFR and other related bodies as well.

Different universities have various biological courses as well as plant genetic courses. There are not specific courses and universities on forest genetic resources explicitly at Bachelor's level or Masters or PhD's levels.

There is a clear need on the priorities for research, education and training to support the conservation and sustainable use of forest genetic resources in different levels including BSc, Master as well as Ph.D. levels.

Endemic plant list of the Garden is published annually by RIFR which is sent to over 350 botanical gardens and gene banks across the world (Taeb, 1995).

National Legislation:

Forest policy and legal framework (2008):

National forest law (as Specific forest law) started in year 1967.

National forest program started in year 1996 for implementation.

National forest policy in five years plans and yearly programme.

Sub-national forest policy in five years plan and yearly provincial programme

There are some legislation and or regulations in I.R. of Iran that are relevant to the forest genetic resources in various institutes which are under guidance and management of ministry of agriculture, research, education and extension organization including phytosanitary, seed production, seed certification, community rights, patent legislation, and other activities on plant genetic resources including forest genetic resources.

The I.R. Iran has a quarantine law came into effect since 1967. This law allows the import of live plant material only after fulfilling certain requirements. Any plant part is subjected to quarantine rule including *in vitro* material. The quarantine office function under the Ministry of Agriculture (Agriculture Jahad), this office has a representative at the NPGBI who is responsible to facilitate the fast handling of material exchanged through the NPGBI (Taeb, 1995).

All the seed imports and distribution is done either directly by the ministry of agriculture or by private companies after receiving permission from the Ministry. Although the use of recommended varieties by the farmers have been encouraged by the government, there is not any legal prohibition preventing them from using a farmer's variety (Taeb, 1995).

The country has an intellectual property right legislation. This law has some weaknesses as far 20 as plant genetic resources are concerned and it was review at the year 1995 (Taeb, 1995).

The policy of the I.R. Iran has been to strengthen the international collaboration among countries. Exchange of plant genetic resources has always been encouraged among the plant scientists. At the NPGBI it is the head of the department who makes decision on sending a plant material (Taeb, 1995).

Table 18. Needs for developing forest genetic resources legislation.



Needs	Priority level			
	Not applicable	Low	Moderate	High
Improve forest genetic resources legislation				√
Improve reporting requirements			√	
Consider sanction for non-compliance			√	
Create forest genetic resources targeted regulations				√
Improve effectiveness of forest genetic resources regulations				√
Enhance cooperation between forest genetic resources national authorities				√
Create a permanent national commission for conservation and management of forest genetic resources				√
Other (Please specify)				
There is a prepared law on plant genetic resources in current consideration in cabinet (government) need to be inforce and encourage to speed up				√

National needs:

- Recognizing forest genetic resources as one of the main priority in forestry research and education for implementation of its outcomes
- Expansion of the computerized documentation system and its integration into an international network.
- Expansion of research facilities including cold storage facilities.
- Training of adequate number of scientists in the field of Forest Genetic Resources (10 Ph.D, 20 MSc, and 30 BSc)
- Inclusion of biotechnological tools, particularly nano, *in vitro* techniques and the use of chromosomal markers (RFLP, RAPD, Isozymes) in conservation and evaluation of forest genetic resources.
- Studies relating to the forest ecosystem, environmental parameters and species distribution.
- Development of *in situ* conservation and evaluation facilities.

Public Awareness:

Scientific Journals on related to plant genetic resources:

<p>1) Seed and Plant Improvement Journal Published by : Seed and Plant improvement Institute Excutive Director: Director general (SPII) Editor-in-chief :Dr. M. Torabi email: spij@spii.ir Persian</p> 	<p>2) Seed and Plant Production Journal Published by : Seed and Plant improvement Institute Excutive Director: Director general (SPII) Editor-in-chief: Dr. M .R. Jalal Kamali email: sppj@spii.ir Persian</p> 
<p>3) Crop Breeding Journal Published by : Seed and Plant improvement Institute Excutive Director: Director general (SPII) Editor-in-chief:Dr.M..R.Jalal Kamali Instructions to Authors of Manuscripts for Crop Breeding Journal email: cbjournal@spii.ir English</p>	

	
<p>4) Iranian Journal of Rangelands and forest plant Breeding and Genetic Research Published by : Research Institute of Forests and Rangelands Excutive Director: Director general (RIFR) Editor-in-chief: Dr. H. Mirzaei Nodoushan mirzaie@rifr-ac.ir email: ijrfpbgr@rifr-ac.ir Persian</p> 	<p>http://www.rifr-ac.ir/journals/genetic.aspx Address : P.O. Box 13185-116,Tehran, Iran. Tel : 4195901-5 Fax : 4195907 Started its work from 2000, papers in different fields had been published by the Research Institute of Forests and Rangelands. In 2003 by the licence from Ministry of culture and Islamic guidance, the publication has been followed according to research method. By the year 2004 the abstract of papers were placed in the internet site on www.cabi-publishing.org. Also it has scientific-research licence, from the Ministry of Science and Technology.</p>



Seed and Plant Improvement Institute (SPII)
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Seed and Plant Improvement Institute:

History:

Scientific plant breeding activities in Iran has initiated in early 1920s, and was carried out in some part of the country including Karaj, 40 Km northwest Tehran and Varamin, 40 Km east Tehran. The development of plant breeding and agronomy research in Iran can be divided into five distinct periods:

- 1) The first period (1927 to 1945),
- 2) The second period (1945 to 1960),
- 3) The third period (1960 to 1978),
- 4) The forth period (1978 to 1993), and

5) The fifth period (1993 to present).

1) The first period (1927 to 1945): Establishment of Higher School of Agriculture followed by the foundation of Faculty of Agriculture in 1927, in Karaj, were the two most prominent initiatives. Many obstacles were experienced during this period, since shifting from traditional and old approaches needed educated and trained man power in new agriculture. Technical infrastructures and experimental fields for conducting field experiments were also constructed and established. From 1932, seed multiplication and purification were practiced in the experimental field of Higher School of Agriculture. Seed samples of cereals (wheat, barley), food legumes (beans, chickpea), vegetables, and cotton were collected from all around the country and were sown in the experimental fields and evaluated. Sugar beet varieties were imported from Germany, Belgium and Denmark and evaluated under Iranian conditions. In 1933, preliminary field experiments and seed multiplication schemes were carried out for cereals, cotton and sugar beet, in the experimental fields of Higher School of Agriculture. The first plant breeding enterprise was established in Karaj, in 1935, with the main mandate of improvement and multiplication of sugar beet seed. Concurrently, primary facilities for cereal improvement and seed multiplication were also made available in Karaj. In 1936, in Varamin as one of the main cotton growing areas in Iran, a plant breeding enterprise was established to improve and produce elite seeds of cotton and wheat. 2) The second period (1945 to 1960): This period commenced as concurrent with the end of the Second World War and continued until **the establishment of Seed and Plant Improvement Institute in 1960.** In fact this period was in coincidence with the development and rapid expansion of new agricultural approaches, techniques and equipments in developed countries. This period of time can be termed as the period of training of plant breeders and preparation and development of required infrastructures for seed and plant improvement in the country. Many of researchers initiated and conducted some studies and preliminary yield trials in Karaj and Varamin which were better equipped. Horticultural crops improvement began in 1946, by the establishment of collection gardens of different cold and temperate fruit species in Karaj, collected either from different part of Iran or imported from other countries. This was also done for citruses in the north (Ramsar, Mazandran province) and date palm (Ahwaz, Khuzestan province) in the south. In 1948, with the separation of Faculty of Agriculture from the Ministry of Agriculture, all duties, related equipments and facilities for collection, evaluation and experimenting of wheat and barley landraces and local populations were transferred and concentrated in Karaj Plant Breeding Enterprise. Cotton seed improvement was followed more seriously from 1951, and initiative of establishment of General Office of Certified Seed Supply was formed and took place in 1956. This office was established to supervise and control the seed producing fields of cereals and cotton in Karaj and Varamin, and certified seeds were, then, distributed to the farmers. By organizing the scattered plant breeding research activities in the country, the rice breeding research commenced in Lahijan Agricultural Enterprise in 1957 and developed by establishment of Rice Research Field Station in Rasht in 1959. All this endeavors led to the approval of the law of Seed and Plant Improvement Institute by legislative body (Senate Assembly) in 1959, and its establishment in 1960. 3) The third period (1960 to 1978): Scattered research in different sections of the Ministry of Agriculture, and the then General Office of Crop Production

with limited organization and facilities could not directly lead the national research system. Hence, the establishment of a new and independent institute with wide legal authorities was a necessity. Therefore, Seed and Plant Improvement Institute was established in 1960, and the following areas of research and development were determined as its mandates- Breeding and agro-technique research for most of the field crops such as: wheat, barley, cotton, rice, oil seed crops, maize, forage crops, and hemp. - Production of registered and certified seeds to meet seed requirements of the country. Propagation and distribution of grafted seedlings suitable for different climatic conditions.- Control of field and certification of seed produced by seed producer farmers, based on rules and regulations determined in **the Ministry of Agriculture and Natural Resources**.

Lack of required infrastructures and facilities were the most serious hurdles to be handled and developed at the beginning. To implement and materialize the described mandates the institute formed four general offices as follows: 1- **General office for horticulture crops research for preliminary propagation of fruits**, vegetables and potato varieties. 2- General office for field crops research and preliminary seed increase of wheat, barley, cotton, maize, rice, forage crops, food legumes, and other field crops. 3- General office for seed multiplication and certification to supervise and control seed multiplication fields and issuing seed certificates. 4- General office for multiplication and distribution of seed to provide and distribute improved seed. To facilitate the civilities of these offices the institute also established: cereal improvement laboratory, sugar beet seed improvement laboratory, fruits improvement laboratory, in Karaj as well as seed improvement laboratory in Varamin, rice improvement laboratory in Rasht, palm date improvement laboratory in Ahwaz, and seed specialized glass-houses in Karaj and Varamin. In addition to plant breeding centers in Karaj and Varamin, three other main field research stations were also established in Mashhad in Khorasan, Moghan in East Azarbaijan and Darab in Fars.

As the required infrastructures and facilities, particularly human resources were developed and provided, the work load also considerably increased. Therefore, the institute went into a change in its organization as the Oil Seed Crops Research Department was established in 1969 followed by formation of Maize Research Department in 1970. In 1971, the general office for horticulture crops research changed into **Horticultural Crops Research Department**, and the vegetable crops unit was separated as to form Vegetable Crops Research Department in 1978. 4) The forth period (1978 to 1993): To proceed with amendment of its organization, Seed and Plant Improvement Institute followed the strategy of the formation of new research departments. Food Legumes Research Department was formed in 1980, and with the development in the science of crop physiology, the Physiology, Biochemistry and Biotechnology Research Department was established in 1983. To enhance the utilization of plant genetic resources in crop breeding programs and increase their efficiency, the **Genetic and Plant Genetic Resources Research Department** was also formed and established in the second half of 1983. This organization scheme was in place until a dramatic shift occurred in this mother plant breeding and agronomy institute, when new commodity research institutes were separated from it and formed new independent

research institute, in early 1990s. 5) The fifth period (1993 to present): This period is known as the period of formation and establishment of commodity research institutes. The first institute that separated from SPII and established as an independent institute in 1992, was Dryland Agricultural Research Institute (DARI). This was followed by separation and establishment of **Pistachio Research Institute in 1992, Date Palm and Tropical Fruits Research Institute in 1993**, Rice Research Institute in 1994, **Citruses Research Institute in 1996**, Cotton Research Institute in 1997, **Agricultural Biotechnology Research Institute in 2000** and Seed **and Plant Certification Research Institute in 2004**. All these new commodity research institutes are carrying-out breeding and agronomy research for the concerned crops.

Present status :

Currently, eight departments perform the skeleton of the Seed and Plant Improvement Institute, and their mandates are, planning, coordinating and conducting research projects and seed/plant increasing programs in **head quarter in Karaj and 35 provincial Agriculture and natural Resources Research Centers and their 80 affiliated field research stations across the country**. These research/technical departments are:

Cereal Research Department

Horticulture Crops Research Department

Maize and Forage Crops Research Department

Oil Seed Crops Research Department

Potato, Onion and Irrigated Food Legumes Research Department

Genetics and Plant Genetic Resources Research Department

Vegetable Crops Research Department

Technical and Research Services Department

Genetics and Plant Genetic Resources Research Department

Dr. Javad Mozaffari is Head of Department and Member of the Board

Conservation and use of plant genetic resources in Iran have begun as soon as cereal breeding and improvement program commenced in 1930s. Initially these activities were scattered, and there is no record of any centralized plan for collection, identification, characterization and use of plant genetic resources. **In 1977 a small unit of “Plant Genetic Resources” was established in Seed and Plant Improvement Institute” with the aid of Food and Agriculture Organization (FAO), of the United Nations. In 1983, National Plant Gene Bank of Iran was established** in collaboration with FAO and the investment of the Iranian government in order to prioritizing, organizing and managing the research activities and collection expeditions of plant genetic resources at the national level. Currently, the Genetics and Plant Genetic Resources Research Department and National Plant Gene Bank of Iran implement collection expeditions and research projects with fifty researchers/scientists at its headquarter in Karaj and provincial Agriculture and Natural Resources Research Centers across the country.

The mandate of the Plant Genetic Resources Research Department and National Plant Gene Bank of Iran is planning, coordination, implementation, and supervision of all research projects and activities in the following areas:

- 1- Collection and conservation of plant genetic resources with **high priority given to horticulture** and field crops and their wild relatives. The aims of these activities are to conserve and protect one of the most valuable national treasures of the country.
- 2- Characterization of plant genetic resources supplemented by basic genetics research to facilitate the use of the genetic materials in different breeding and research programs in the country.

Achievement of **the first rank** among the plant gene banks in the Central Asia, West Asia and North Africa (**CWANA**) countries, collection and conservation of more than 63 thousand plant genetic accessions of field crops and their wild relatives, collection and conservation of more than 5,000 plant genetic accessions of fruit trees in 26 live collection gardens are among the most important achievements of the Genetics and Plant Genetic Resources Research Department and National Plant Gene Bank of Iran.

In a national report of 1995 mentioned that the importance of the plant genetic resources was fully recognized, the awareness on the importance of plant genetic resource collection goes as far back as to 1948. At the time of the report in 1995 about 16,500 land races of cereals were collected at the Faculty of Agriculture, Tehran University. Unfortunately, at the time that the NPGBI was established, only 6,500 of this collection was available which was preserved (Taeb M., 1995).

Plant Genetic Resources Research Units:

- 1- Cytogenetic
- 2- Molecular Genetics
- 3- Resistance to Pest and Diseases
- 4- Resistance/Tolerance to Abiotic Stresses
- 5- Germplasm Health
- 6- Population Genetics and Biometry
- 7- New Crops & Under-utilized Crops

Plant Gene Bank Units:

- 1- National Plant Gene Bank
 - 2- Wheat Collection
 - 3- Barley Collection
 - 4- Rice Collection
 - 5- Cereal Wild Relatives Collection
 - 6- Food Legumes Collection
 - 7- Oil Seed plants Collection
-
- 1- Forage Plants Collection
 - 2- Vegetables Crops Collection
 - 3- Botany and Systematic studies

- 4- Information and GIS
- 5- In vitro Culture
- 6- Seed Processing and Preparation

Research Facilities and Laboratories

- 1- Cytogenetic and Interspecific Crossing Laboratory
- 2- Molecular Genetics and Biotechnology Laboratory
- 3- Germplasm Health Laboratory
- 4- Molecular Markers and Genetic Fingerprinting Laboratory
- 5- Seed Laboratory
- 6- Botany and Herbarium Laboratory
- 7- Tissue Culture Laboratory
- 8- Growth Rooms
- 9- Cold Rooms
- 10- Fruit Trees Collection Gardens

Table 19. Awareness raising needs.

Needs	Priority level			
	Not applicable	Low	Moderate	High
Prepare targeted forest genetic resources information				√
Prepare targeted forest genetic resources communication strategy				√
Improve access to forest genetic resources information			√	
Enhance forest genetic resources training and education				√
Improve understanding of benefits and values of forest genetic resources				√
Other (Please specify)				
Public training and awareness – society level				√
Professional and general education for high and medium level managers/ decision makers and decision formers				√
Professional education for staff in programming, implementation and research levels				√

International Agreements

The National Biodiversity Strategy and Action Plan (FRWO, 2005):

The Enabling Activity Project known as “The National Biodiversity Strategy and Action Plan” started in 1998 in collaboration with UNDP.GEF and IUCN and on the basis of obligations restored due to the joining of the Islamic Republic of Iran to the Convention of Biological Diversity. The activities for identification of the natural resources in Iran have lead to the preparation of a series of 28 reports, each assessed by members of the Steering Committee.

According to the approval of both the Steering Committee in February 2001 and the National Committee on Sustainable Development in May 2001, four strategies are ratified as follows:

- Promotion of the public awareness and participation
- Formation of biodiversity information systems
- Sustainable use of biodiversity resources
- Integrated conservation of biodiversity

In October 1977 two FAO gene bank specialists were send to Karaj to help local personnel of SPII with technical aspects of germplasm conservation. This collaboration was eventually lead to the sign of an agreement between SPII and the FAO on plant genetic resources conservation on 1978. A small gene bank with a few staff and minimal laboratory facilities was established in SPII at Karaj. According to this agreement, this establishment was called Plant Genetic Resource Unit (PGRU) (Taeb M., 1995).

Following the formation of PGRU, the government of the Islamic Republic of Iran made a strong commitment to conservation of genetic resources and in 1983 the National Plant Gene Bank of Iran was established by using the resources of PGRU plus some additional investments. The NPGBI is located in the Department of Genetics and Genetic Resources of SPII and is funded by the Agricultural Research, Extension and Education Organization (AREEO) of the Ministry of Agriculture. Realizing the importance of germplasm conservation, the government plan to expand the NPGBI in the near future by making it an independent institute under AREEO (Taeb M., 1995).

The NPGBI is a permanent member of the International Plant Genetic Resource Institute (IPGRI) and is also an active member of the Regional Net-Work of Plant Genetic Resources Activities for West Asian and North African Countries (WANANET). Representatives of NPGBI are members of the specialized working groups of WANANET and it’s steering committee (Taeb M., 1995).

NPGBI operates on a net work basis, a planing and organizing committee for plant genetic resources is operational in each of the 26 provinces of the country. Few acting sub-committees in each province are responsible for performance and execution of NPGBI policies. There were (1995) at least two permanent NPGBI staff in each province and many colleagues from other organizations and departments take part in meeting the NPGBI programs (Taeb M., 1995).

At the year 1995, a total of 155 species were conserved in the NPGBI. These species belong to 125 crops, of which more than 40,000 samples are available. The collection at NPGBI contains mainly indigenous material, nevertheless it contains some material

received from ICARDA, ICRECAT and various sources in Canada, Japan, China, Russia, USA and India. Also some material stored (1995) in cold room for Afghanistan (Taeb M., 1995).

Although the size of collection in different species varies, less than 5% of the total stocks in the NPGBI have a foreign origin. The material in NPGBI are equally important, however the cereal collection with its vast number of samples is regarded as one of the best sets (Taeb M., 1995).

Iran has signed or ratified all related international agreement related to international agreements, treaties, conventions, or trade agreements relevant to the sustainable use, development and conservation of plant genetic resources including forest genetic resources such as UNCBD or CITES.

Following table show the details of acceptances (According to the UNCBD web site by 05-03-2012):

	Party/ Non Party	Ratification	Date	Note
UNCBD/ Convention	Party	Ratification	Since: 1996-08-06	
Cartagena Protocol	Party	Ratification	Since: 2004-02-18	
Nagoya Protocol	Non Party	-	-	
Nagoya – Kuala Lumpur Protocol	Non Party	-	-	

International Collaboration

Endemic plant list of the Garden is published annually by RIFR which is sent to over 350 botanic gardens and gene banks across the world (Taeb, 1995).

Iran actively participates in international and regional meetings and has signed some bilateral and multilateral agreements in the field of sustainable development of forest areas, biological diversity protection and forest parks management. In fact, the forest policy aims is to enhance international cooperation in order to manage all types of forests (FRWO, 2005).

Low Forest Cover Countries (LFCCs)

In large areas of the world, and especially in many developing countries, forest cover is limited in extent. In these countries, scarce forest and wooded lands are particularly significant in terms of their economic, social, cultural, environmental and subsistence values. Low forest cover poses special challenges in meeting national needs through sustainable development and ensuring adequate access to the many goods and services provided by forests, including wood and non-wood products, watershed protection, soil

conservation, biodiversity conservation and carbon storage. Strategies for rehabilitation and conservation of forests are crucial steps towards sustainable development in low forest cover areas. The progress in implementation of the Intergovernmental Panel on Forests/International Forum on Forests Proposals for Action relating to Low Forest Cover Countries (LFCCs). Reference was made to national reports to the CSD, CBD and CCD, among other sources. The definition of LFCCs; here a threshold of less than 10% land area covered by forest was adopted, giving a total of 67 LFCCs.

The expert meeting held in Tehran, 1999, helped greatly to provide clear guidance on the issues that are most important for forest management in LFCCs. The launch of the Tehran Process and the founding of its secretariat represent additional steps forward.

However, progress has been slow in establishing the full capability of the process and its secretariat, and additional international resources are needed to make the expected progress. There is little evidence that restoration of degraded forests or reestablishment of native forest landscapes has been given any priority. It is also difficult to assess what level of progress has been made in forest conservation among LFCCs.

Data on unique forest types and their protections are limited. Technical and institutional capacities have been identified by most LFCCs as serious limitations in progress towards implementing the IPF/IFF Proposals for Action, and especially drafting and implementation of national forest programmes. International co-operation and financial assistance are required to help remedy these problems. Donor countries and institutions will need to recognise the importance of forests to poverty alleviation in LFCCs and make long-term commitments of resources in order to assist them in improving their capacities. LFCCs themselves need to accord higher priority to forest issues, including the mobilization of domestic resources.

As recommended by the 14th meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA), the Conference of the Parties is invited to adopt a decision on this matter along the following lines:

Takes note of the importance of collaboration with all relevant regional and international bodies mandated to promote conservation and sustainable use of various types of forests, including those in countries with low forest cover (LFCCs) and fragile forest ecosystems; Requests the Executive Secretary to explore, together with the Low Forest Cover Countries (LFCCs) secretariat, the possibility for developing a workplan, including identification, development and implementation of targeted joint activities to support Parties, in particular developing countries with low forest cover, in the implementation of the programme of work on forest biodiversity;

The Conference of the Parties to the Convention on Biological Diversity in its Tenth meeting in Nagoya, Japan, 18-29 October 2010, Agenda item 6.3 made a decision, X/36. Forest biodiversity, for Cooperation with the United Nations Forum on Forests (UNFF) and the International Tropical Timber Organization (ITTO) and the Low Forest Cover Countries (LFCCs) Secretariat.

Iran is among low forest cover countries (LFCCs) which their forest coverage is less than 10% of the country's total land areas. Tehran Process Secretariat for Low Forest Cover

Countries (TPS for LFCCs) was established in Iran. The Islamic Republic of Iran is an active member of this intergovernmental organization with permanent observer status in united nations, ECOSOC (UNFF). TPS for LFCCs has a regional and subregional responsibility to take care of needs an requirement of LFCCs in forestry sector including forest genetic resources. Recently a memorandum of understand (MoU) have been sing between Executive Director of UNCBD and Head of TPS for LFCCs for conservation and protection of forest genetic resources and diversity in regional or sub-regional based on thematic networking.

Table 20. Overview of the main activities carried out through networks and their outputs

Network name	Activities *	Genus/species involved (scientific names)
Not Available		

* Examples of activities:

- Information exchanges
- Development of technical guidelines
- Development of shared databases
- Establishment of genetic conservation strategies
- Germplasm exchange
- Elaboration, submission and execution of joint research projects.
- Other (Please specify) _____

Current Status of National Biodiversity Strategies and Action Plans (NBSAP): The development of biodiversity strategies and action plan was a result of an enabling activity project known as The National Biodiversity Strategy and Action Plan , which started in December 1998 in collaboration with the United Nations Development Program (UNDP), the Global Environment Facility (GEF) and the World Conservation Union (IUCN) and on the basis of the obligation assumed by the Islamic Republic of Iran upon becoming a party to the Convention on Biological Diversity (Department of Environment, 2010).

The NBSAP has significantly influenced the development and implementation of the country s biodiversity policy framework. This framework, in turn, has lead to the development of the National Biodiversity Strategy, preparation of the biodiversity National Action Plan for implementation of the national biodiversity strategies, and the preparation and delivery of many National Reports to the CBD (Department of Environment, 2010).

Iran s four national biodiversity strategies include Promotion of public awareness and participation; Formation of biodiversity information systems; Sustainable use of biodiversity resources; and Integrated management of biodiversity. In addition the first draft of Action Plan to make the national strategies practicable were prepared in ,1999 after declaration of National Strategies, and in a participatory manner involving stakeholders from governmental, non-governmental and private sectors (Department of Environment, 2010).

It is very clear that NBSAP has redirected the environmental agenda of the Country by influencing the conservation agenda and proposing new tasks for several governmental institutions, mainly the Department of the Environment (DoE) and Forest, Rangelands

and Watershed Organization (FRWO), two lead agencies in Iran (Department of Environment, 2010).

Also Iran has benefited from the GEF funding opportunities for developing National Strategies, National Action Plans and Communications to MEAs (in particular Rio Conventions). It is appears clear that several national conservation agendas have been initiated by GEF supported projects. The best example is the success of the NBSAP, which have incorporated biodiversity conservation efforts into the national level planning (Department of Environment, 2010).

In the process of NBSAP project there are several lessons learned. Following are few examples (Department of Environment, 2010):

- Conservation solutions need to involve stakeholders with different priorities and needs.
- More efforts shall be put into the promotion of biodiversity conservation.
- The Department of the Environment cannot do any parturient activities on addressing and promoting the strategic significance of biodiversity to the public separately from the other related organizations and stakeholders such as Education and Training Ministry,
- Iran has entered a crucial stage for biodiversity conservation, but the biodiversity monitoring work lags far behind conservation needs.

The National Biodiversity Strategy and Action Plan (NBSAP) has significantly influenced the development and implementation of the country s biodiversity policy framework. This framework, in turn, has lead to the development of the National Biodiversity Strategy, preparation of the Biodiversity National Action Plan for implementation of the national biodiversity strategies, and the preparation and delivery of many National Reports to CBD as follows (Department of Environment, 2010):

- First National Report to CBD (2001)
- Second National Report to CBD (2003)
- National Biodiversity Strategy and Action Plan (2001)
- Thematic Report on Alien and Invasive Species (2001)
- Thematic Report on Forest Ecosystems (2001)
- Thematic Report on Mountain Ecosystems (2003)
- Thematic Report on Protected Areas (2003)
- Thematic Report on Technology Transfer and Cooperation (2003)(
- Voluntary Report on Implementation of Expanded Programme of Work on Forests 2003))
- Interim National Report on the Cartagena Protocol on Biosafety (2005)
- First Regular National Report on the Implementation of Cartagena Protocol on Biosafety (2007)

The needs and priorities of Iran in relation to the forest genetic resources for future international collaboration could be listed as mentioned in Table 21.

Table 21. Awareness raising needs/ Needs for international collaboration and networking

Needs	Level of priority			
	Not applicable	Low	Medium	High
Understanding the state of diversity			√	
Enhancing in situ management and conservation				√
Enhancing ex situ management and conservation				√
Enhancing use of forest genetic resources			√	
Enhancing research				√
Enhancing education and training				√
Enhancing legislation			√	
Enhancing information management and early warning systems for forest genetic resources.			√	
Enhancing public awareness				√
Any other priorities for international programmes				
Establishment of regional networks and identified needs and requirements to activate countries to recognize national level systems to connect to regional and international bodies				√

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Chapter 7: Access to Forest Genetic Resources and Sharing of Benefits arising from their Use

Access to forest genetic resources:

- Regulations with respect to access and benefit sharing of forest genetic resources in Iran.
- Legislation in Iran which limit access and movement of forest genetic resources into or out of the country.

Sharing of benefits arising out of the use of forest genetic resources:

There are some kind of mechanisms in Iran established by the local people as forest inhabitants for recognizing intellectual property rights related to the forest genetic resources (using and benefit arise from some of the forest area and trees belong to a certain group of tribe).

The government established mechanisms to recognize this right for sharing of the benefits arising out of the use of the forest genetic resources.

Chapter 8: The Contribution of Forest Genetic Resources to Food Security, Poverty Alleviation and Sustainable Development (Table 22)

Economy - overview:

GDP - per capita: \$8,100 (2005 est.)

GDP - real growth rate (%):4.8% (2005 est.)

Agriculture – products: wheat, rice, other grains, sugar beets, fruits, nuts, cotton; dairy products, wool; caviar

GDP - composition by sector (%):agriculture: 11.8%, industry: 43.3%, services: 44.9% (2005 est.)

Related Industries: textiles, food processing (particularly sugar refining and vegetable oil production),

Primary designated function of forest (percent):

Production (14%), Protection of soil and water (0%), Conservation of biodiversity (1%), Social services (0%), Multiple use (85%).

Growing stock in forest:

Total (536 million m³) and Per hectare (48 m³).

Trends in carbon stock in living forest biomass 1990-2010:

Year	1990	2000	2005	2010
million metric tons	249	249	254	258

Carbon stock in living forest biomass 1990-2010:

Year	2000
per hectare in tons	23

Trends in removals of wood products 1990-2005:

Industrial Roundwood

Year	1990	2000	2005
Total volume (1 000 m ³ over bark)	1256	2050	2448

Woodfuel

Year	1990	2000	2005
Total volume (1 000 m ³ over bark)	425	55	20

Value of Industrial roundwood removals in year 2005:

114 million US\$

Chapter 8: Contribution of Forest Genetic Resources to Food Security and Poverty Reduction

Table 22. List tree and other woody species that are important in your country for food security or livelihoods

Species		Use for food security	Use for poverty
Scientific name	Native (N)		

	or exotic (E)		reduction
List of forest trees with conservation importance as follow:			

List of forest trees with conservation importance:

*** = First priority, ** = Second priority, * = Third priority

priorities	Growth zones	Scientific name	Persian name	row
***	Hyrceanian and Arasbaran	<i>Acer campestre</i>	کرکو	1
***	"	„ <i>hyrcanum</i>	سفیدکرکو	2
***	"	„ <i>platanoides</i>	افرای برگ چناری	3
***	"	„ <i>pseudoplatanus</i>	افرای شبه چناری	4
***	"	„ <i>turcomanicum</i>	کیکم ترکمنی	5
***	"	<i>Albizia julibrissin</i>	شب خسب	6
***	"	<i>Betula pendula</i>	توس	7
**	"	<i>Carpinus schusheensis</i>	کچف	8
**	"	<i>Celtis australis</i>	داغداغان	9
***	"	<i>Cerasus avium</i>	آلوکک	10
***	"	<i>Tilia platyphyllus</i>	نمدار	11
***	"	<i>Fraxinus excelsior</i>	ون	12
***	"	<i>Zelkova carpinifolia</i>	آزاد	13
***	"	<i>Gleditschia caspica</i>	لیلکی	14
***	"	<i>Ulmus carpinifolia</i>	اوجا	15
***	"	" <i>glabra</i>	ملج	16
**	"	<i>Juniperus communis</i>	پیرو	17

**	"	" <i>sabina</i>	مای مرز	18
***	"	<i>Thuja orientalis</i>	سرو خمره ای	19
***	"	<i>Populus caspica</i>	سفید پلت	20
**	"	<i>Pterocarya fraxinifolia</i>	لرک	21
**	"	<i>Pyrus boissieriana</i>	گل‌ابی	22
**	"	" <i>communis</i>	خج	23
***	"	<i>Quercus petraea</i>	سفیدمازو	24
*	"	<i>Salix acmophylla</i>	زرد بید	25
*	"	" <i>excelsa</i>	سیاه بید	26
***	"	<i>Sorbus aucuparia</i>	تیس	27
***	"	" <i>torminalis</i>	بارانک	28
***	"	<i>Taxus baccata</i>	سرخ‌دار	29
***	"	<i>Juniperus foetidissima</i>	اردوج	30
**	"	<i>Malus orientalis</i>	سیب جنگلی	31
***	Zagros	<i>Acer monspessulanum</i>	کیکم	1
*	"	<i>Amygdalus orientalis</i>	بادام ارژن	2
**	"	<i>Amygdalus kotschyi</i>	بادام وحشی	3
**	"	<i>Amygdalus eburnea</i>	بادام وحشی	4
***	"	<i>Cerasus mahaleb</i>	محلّب	5
***	"	<i>Cerasus microcarpa</i>	راناس	6
***	"	<i>Crataegus azarolus</i>	زالزالک	7
***	"	<i>Crataegus pontica</i>	زالزالک	8

**	"	<i>Celtis caucasica</i>	داغداغان	9
***	"	<i>Cercis siliquastrum</i>	ارغوان	10
***	"	<i>Fraxinus rotundifolia</i>	ون	11
**	"	<i>Juniperus excelsa</i>	ارس	12
**	"	<i>Lonicera nummularifolia</i>	شن	13
***	"	<i>Populus euphratica</i>	پده	14
***	"	<i>Pirus glabra</i>	گلابی وحشی	15
*	"	<i>Platanus orientalis</i>	چنار	16
**	"	<i>Pistacia atlantica</i>	بنه	17
***	"	<i>Pistacia khinjuk</i>	خنجک	18
***	"	<i>Sorbus luristanica</i>	دیو آلبالو	19
***	"	<i>Ulmus boissieri</i>	نارون	20
***	Irano-Turanian	<i>Haloxylon ammodendron</i>	سیاه تاغ	1
***	"	<i>Haloxylon persicum</i>	تاغ زرد	2
***	"	<i>Hippophae rhamnoides</i>	سنجد تلخ	3
***	"	<i>Melia azedarach</i>	زیتون تلخ	4
***	"	<i>Olea ferruginea</i>	زیتون زنگی	5
***	"	<i>Rhus coriaria</i>	سماق	6
***	"	<i>Tamarix aphylla</i>	گزشاهی	7
***	Khalyjo-Omanian	<i>Acacia albida</i>	آکاسیا	1
***	"	<i>Acacia ehrenbergiana</i>	چگرد	2
***	"	<i>Acacia modesta</i>	آکاسیا	3
***	"	<i>Acacia nilotica</i>	چش - کرت	4

***	"	<i>Acacia oerfota</i>	تج یا مغیر	5
**	"	<i>Acacia salicina</i>	آکاسیا	6
***	"	<i>Avicennia officinalis</i>	حرا	7
**	"	<i>Azadirachta indica</i>	چریش	8
***	"	<i>Calotropis procera</i>	استبرق	9
***	"	<i>Capparis decidua</i>	کلیر	10
***	"	<i>Dalbergia sissoo</i>	شیشم	11
***	"	<i>Dodonea viscosa</i>	ناترک	12
**	"	<i>Ficus bengalensis</i>	مکرزن	13
**	"	<i>Ficus religiosa</i>	انجیر معابد	14
***	"	<i>Lawsonia inermis</i>	حنا	15
***	"	<i>Moringa peregrina</i>	گازرخ	16
***	"	<i>Myrtus communis</i>	مورد	17
***	"	<i>Nannorrhops ritchieana</i>	داز	18
***	"	<i>Prosopis cineraria</i>	کهور درختی	19
***	"	<i>Rhizophora mucronata</i>	چندل	20
***	"	<i>Salvadora oleoides</i>	پیر	21
***	"	<i>Salvadora persica</i>	چوج	22
***	"	<i>Tecomella undulate</i>	انار شیطان	23
**	"	<i>Terminalia catapa</i>	گرم زنگی	24
**	"	<i>Ziziphus nummularia</i>	رملیک	25
**	"	<i>Ziziphus spina Christi</i>	کنار	26

Sources of Information

All references are cited in the end of the research report.

Section IV: Appendices

List of tables:

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Table 2. Forest ownership and area (FRA)

Table 3. Major forest type categories and main tree species. Forest types may be drawn from the categories used in your country or from the list below (Forest Types and Ecological Zone breakdown used in FRA 2000).

Forest Types and Ecological Zone breakdown used in FRA 2000

Table 4. Priority species (scientific names)

Table 5. Forest species currently used in your country; for each species please indicate (N or E) whether native or exotic (using the codes for uses listed below).

Table 6. Main tree and other woody forest species providing environmental services or social values. For each species please indicate (N or E) whether native or exotic.

Services and values include:

Table 7:

Table 7a. List of forest tree and other woody forest species which is endemic in Iran.

Table 7b. Table of endemics present in different phytogeographical regions and also the average number per million hectare within each region.

Table 7c. Total number of listed taxa based on defined IUCN categories, endemics, Vulnerable (VU) and Endangered (EN) species and their families.

Table 7d. List of tree and other woody forest species considered to be threatened in all or part of their range from genetic conservation point of view.

Table 8:

Table 8a. Annual quantity of seeds produced and current state of identification of forest reproductive material of the main forest tree and other woody species in the country.

Table 8b. Annual number of seedlings (or vegetative propagules) planted and the state of identification of the reproductive material used for the main forest tree and other woody species in the country.

Table 9. List forest species for which genetic variability has been evaluated and check each column that applies. Begin with species mentioned in Tables 5 and 6.

Table 10. Target forest species included within *in situ* conservation programmes/units.

Table 11 *ex situ* conservation

Table 12. Seed and vegetative propagules transferred internationally per annum (average of last 5 years).

Table 13. Forest improvement programmes. Please check all objectives that apply.

Table 14. Tree improvement trials.

Table 15. Seed orchards.

Table 16. Type of reproductive material available.

Table 17. Institutions involved with conservation and use of forest genetic resources.

Table 18. Needs for developing forest genetic resources legislation.

Table 19. Awareness raising needs.

Table 20. Overview of the main activities carried out through networks and their outputs
 Table 21. Awareness raising needs/ Needs for international collaboration and networking
 Table 22. List tree and other woody species that are important in your country for food security or livelihoods

Glossary, acronyms and abbreviations:

Multilingual Glossary Forest Genetic Resources link:

<http://iufro-archive.boku.ac.at/silvavoc/glossary/index.html>

The above link glossary is the result of a cooperation programme between the FAO Forestry Department and the IUFRO SilvaVoc Terminology Project

DARI	Dryland Agricultural Research Institute
DoE	Department of Environment
FRWO	Forest, Rangelands and Watershed Organization
GEF	the Global Environment Facility
IRIPP	Iranian Research Institute of Plant Protection (ex. Plant Pests and Diseases Research Institute)
IUCN	the World Conservation Union
LFCCs	Low Forest Cover Countries
NBSAP	National Biodiversity Strategies and Action Plans
RIFR	Research Institute of Forest and Rangeland
SPII	Seed and Plant Improvement Institute
TPS for LFCCs	Tehran Process Secretariat for Low Forest Cover Countries
UNDP	the United Nations Development Program

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