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**FOOD AND AGRICULTURE ORGANIZATION  
OF THE UNITED NATION**

**TREES AND BUSHES OF AFGHANISTAN**

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## 1. NANGARHAR, KUNAR AND LAGHMAN PROVINCES

They are eastern province of Afghanistan. The climate is sub-tropical semi-arid mediterranean with frost in the winter. Climatical data collected from Shishum Bagh Agricultural Research Farm indicates that maximum annual temperature is 42 C° and minimum minus 2C°. Annual precipitation varies from 178 to 324 MM. rainy season starts from January and last until May few showers in summers season. Wind velocity is approx. 30-km/h. The maximum pressure of wind is during July November.

The types of land with accordance to the vegetation pattern can be divided in to three main categories they are:

### 1.1. Plain and hilly cultivated land

It is more or less irrigated agricultural land intensively cultivated by field crops such as wheat, maize, barley, cotton, paddy, alfalfa clover, brassica, poppy, orchards, vegetables etc. It is in this category of land where farmers traditionally cultivate forest tree species along the irrigation canals, Summer Derras (shade spots) marginal lands not suitable for agricultural crops. The fruit bearing trees are also planted by farmer but in fertile soil and suitable sites. Farmers in throughout provincial territories without exception practice the traditional manner of cultivation. I had an instructive and careful excursions to study and identify standing trees and shrubs in and around agricultural cultivated fields in Kajja/Ghogyani, Sorkhrood and Sultanpoor, Chaparhar, Rodatt/ Hesarshahi, Kamma, Ghanikhail, Achin, Mohmandara (upper and lower Basawal, Hazarnaw), Shewa, Dara-i-Noor, Behsood districts, and Seracha area in Nangarhar province, Noorgal, Khass Kuna, Upper Chalus Dewgal valley of Chawky district, Narhang, Sarkani, Watapoor, Pich valley, Asmar valley etc in Kunar province, Alingar valley, Alisheng valley for hilly areas, Quarghayee district and Mehterlam and suburbs in plain areas in Laghman province. Types of trees and bushes planted are almost similar: the main types are tabulated as under:

### Trees of Plain and Hilly Cultivated Land

1. Fruit Trees	English Name	Botanical Name	Uses
Ficus carica	Fig	انجیر	Fruit, Fodder & Fuel
Ficus palmate	Fig	انجیر	Fruit, Fodder & Fuel
Prunus armeniaca	Apricot	زردالو	Fruit, Fodder & Fuel
Prunus persica	Peach	شفتلو	Fruit, Fodder & Fuel
Prunus cerasus	Cherry	گیلاس	Fruit, Fodder & Fuel
Prunus communis	Plum	الوجه	Fruit, Fodder & Fuel
Pyrus communis	Pear	ناک	Fruit, Fodder & Fuel
Pyrus malus	Apple	سیب	Fruit, Fodder & Fuel
Amygdalus buharica	Almond	بادام	Fruit, Fodder & Fuel

<b>1. Fruit Trees</b>	<b>English Name</b>	<b>Botanical Name</b>	<b>Uses</b>
Punica granatum	Pomegranate	انار	Fruit, Fodder & Fuel
Vitis vinifera	Grape	انگور	Fruit, Fodder & Fuel
Eriobotrya japonica	Loquat	لوکات	Fruit, Fodder & Fuel
Cydonia vulgaris	Quince	بھی	Fruit, Fodder & Fuel
Citrus aurantium	Orange	نارنج	Fruit & Fuel
Citrus medica	Lemon	لیمو	Fruit & Fuel
Juglans regia	Walnut	چهار مغز	Fruit, Fodder, Fuel & Timber
Phoenix dactylifera	Date Palm	خرما	Fruit & Fuel
Musa sapientum	Banana	کیله	Fruit, Fodder & Fuel

<b>2. Forest Trees</b>			
Morus alba	Mulberry	توت	Fruit, Fodder, Fuel, Timber & Shade
Morus indica, syn. M. acedosa	Black Mulberry	سیاه توت	Fruit, Fodder, Fuel, Timber & Shade
Morus serrata	Mulberry	توت	Fruit, Fodder, Fuel, Timber & Shade
Salix wallichiana	Willow	بید	Fodder & Fuel
Salix babylonica	Weeping willow	مجنون بید	Fodder & Fuel
Populus alba	White poplar	سفیدار	Fodder, Fuel & Timber
Populus deltoides	Poplar	چinar	Fodder, Fuel & Timber
Eucalyptus globulus	Blue gum	یوکولپیس	Fuel & Timber
E. citriodora	Lemon scented gum	یوکولپیس	Fuel & Timber
E. tereticornis	Forest Red gum	یوکولپیس	Fuel & Timber
Platanus orientalis		پنجه چinar	Fodder, Fuel, Timber & Shade
Dalbergia sissoo	Sissoo	شیشم	Fodder, Fuel & Timber
Alnus nitida	Alder	وینتوک	Fodder & Fuel
Leucaena leucocephala	Lead	لوسینا	Fodder & Fuel
Fraxinus floribunda	Ash	شنگ	Fodder & Fuel
Ailanthus glandulosa	Heaven tree	بید روسي	Fuel & Soil Conservation
Robinia pseudoacacia	Black Locust	اکسی گلدار	Fodder, Fuel & Soil Conservation
Cupressus torulosa	Himalyan cypress	سروه	Ornamental & Fuel
Pinus eldarica	Pine	ناجو	Ornamental, Timber & Fuel
Tamarix articulata	Tamarisk	گر	Fuel & Timber

<b>2. Forest Trees</b>			
Melia azedarach	Persian lilac	بکیان پا رنگان	Fodder, Timber, Fuel & Shade
Elaeagnus latifolia	Russian olive	سنجد	Fodder & Fuel

<b>3. Ornamental Exotic:</b>			
Ficus bengalensis	Banyan	ہزار ریشه	Ornamnetal or Beautification
F. religiosa	Pipal	پبل	Ornamnetal or Beautification
Toona ciliata syn. Cedrela toona	Burma Cedar	تون	Fodder & Beautification
Bombax cieba	Red Cotton	بیبے	Seed as Fodder & Beautification
Acer oblongum	Maple	گل بید	Fodder, Ornamental
Gleditschia triacanthos		اکاسی خاردار	Fodder & Fuel
Grevilliea robusta	Silver Oak	بلوط استرلائیٹ	Beautification & Timber
Catalpa .spp.		کتابیا	Fodder & Fuel
Callistemon viminalis	Bottle Brush	گل بید	Fuel & Beautification
Syzygium cumini syn. Eugenia jambolana	Jamun	جامن	Fruit, Fodder & Beautification
Mangifera indica	Mango	ام	Fruit, Fodder & Fuel
Cassia fistula	Indian Laburnum	فلوس چمپر خیال	Fodder, Medicine & Beautification
Piper nigrum	Black peper	مرج سیاه	Beautification
Cryptomeria japonica	Japanes Cedar	کرپتومیر	Beautification & Timber
Aurucaria japonica		ارکار	Beautification & Timber
Pinus roxburgii	Chir pine	کیر	Beautification & Timber
Cupressus arizonica	Cypress	سرو	Beautification & Timber
Ulmus compestris		پشه خانہ	Fuel & Beautification
Ulmus wallichiana		پشه ازاد	Fuel & Beautification

<b>4. Ornmental Bushes</b>			
Cercis griffithii	Red bud	ارغوان	Fodder & Beautification
Syringa emodi		یاسمن	Beautification
Dodonia viscosa		غوراسکی	Hadge
Jusminum revolutum	Jasmin	جسمین	Hadge
Thuja orientalis		مورپان	Hadge
Lantana camara		لنتانا	Beautification
Bouganvillaea glabra		عروس شب	Beautification
Rosa muscata		نسترن	Beautification
Hibiscus syriacus		گل توت	Beautification

<b>4. Ornmental Bushes</b>			
Hibiscus mutabilis		گل عجایب	Beautification

### Fruit bearing trees species

The above-mentioned fruiting trees are planted in almost all the province of eastern Afghanistan either isolated or in the form of gardens or fruit orchards. The main objectives of planting such trees are:

- To produce fruit, firstly for domestic use and/ or surplus for the supply of local market for earning money.
- To provide fuel, from pruning of dead, dying and diseased branches and cutting of unproductive trees.
- To produce timber, as the timber of most of such trees possess construction and industrial value as well. The wood is also used in local agricultural implements.

### Forest tree species

As mentioned earlier, farmers usually plant forest trees. The plantation manner is not as large-scale group plantations within the farm. The vary peculiar manner is the planting of trees in single row along the irrigation canals. Farmers all around the province practice this manner. The main objectives of planting such trees are to:

- Provide fuel wood for their domestic use and surplus to the local market.
- Provide timber for their domestic construction and agriculture implements and surplus stock to local markets.
- Provide supplementary diet for their small animal during the winter season to overcome the animal diet shortage.
- Strengthened the canal banks against water erosion.

### Ornamental exotic:

A careful survey of Jalalabad city recreational gardens, parks and roadside including city and suburbs was conducted. In addition to the trees mentioned above the ornamental exotic are also identified therein.

### Ornamental Bushes:

They are planted in gardens for their beautification value.

## 1.2. Vegetation of semi desert lands

These plains hold a semi-desertic and dry subtropical climate. The ligneous vegetation of such terrain has affinity with semidesertic subtropical vegetation. Number of such desertic plains is situated in different part of Ningarhar provinces between.

- Turkhum border and Mohmandara District.
- Ghnikhail and Achin Districts.
- Hada and Chaperhar District.
- Shorkhrood and Kajja of Khogyani Districts.
- Kachi Azizkhan and Sarkundu Baba.
- Behsood and Shewa Districts.
- Darwanta and Shewa district called Gamberi desert with peculiar pattern of vegetation, which will be dealt with separately.
- Comparatively small piece of such area can be seen between Shewa and Bodyaly of Dara-i- Noor Districts.
- These specific ecological vegetative zones are situated between 550 and 580 M. altitude from the sea level. The climate is very hot and dry, average annual precipitation varies from 178 to 324 MM. In these pieces of land extremely desolated natural ligneous and xerophytic bushes grow very happily. The most important species are as under. Kunar and Laghman provinces also have similar ecological zones

<b>Botanical Name</b>	<b>English Name</b>	<b>Local Name</b>	<b>Uses</b>
Semi-desert vegetation			
Rahazya stricta		گنبدیری	Fuel & Soil Conservation
Withania coagulans		خمزوری	Fuel & Soil Conservation
Zizyphus muritiana	Wild berry	عناب ترش	Fuel & Fodder & Soil Conservation
Calotropis procera		سپلیمی	Fuel & Soil Conservation
Peganum harmala		سفند	Soil Conservation Local Medicine & Fuel
Periploca calophylla		بربرہ	Fuel, Goats Fodder & Soil Conser
Ephdra antermidia		بندک	Fuel, Goats Fodder & Soil Conser
Nerium oleander		اصیل گنبدیری	Fuel & Soil Conservation

Botanical Name	English Name	Local Name	Uses
Capparis spinosa		خار	Fodder, Fuel & Soil Conser.
Saccharum munja	Broom grass	جارو کبل	Cattle Fodder, Fuel & Soil Conser
Seidlitzia rasmarinus		زمی	Fuel & Soil Conservation
Alhagi camelorum	Camel bush	شتر خار	Camel Fodder, Fuel Soil Conser
Vitex negundo		مروندی	Fuel, Goats Fodder & Soil Conser
Calligonum commosum of sandy dune plains of Gamberi desert		بارکی	Settlement of quick mobile sand, Fodder & Fuel

### 1.3. Sandy duns plains of Gamberi desert

The representative example of this geological formation in Nangarhar is the Gamberi desert. This semi-desert is located between Darwanta Dam and Shewa District. The mobile sand of this desert creates large number of problems to the Agricultural land of Shegi village of Shewa District. A specific plant community or Biom called Calligoneta has occupied this sandy dune. Dominant species of plant in this **Biom is Calligonum commosum** which is a bushy plant locally called Barky. This area has provided a grazing land for cattle, as the plant is a good fodder. **The protection and multiplication of this vegetative cover is extremely important for the settlement of quick mobile sand.** This bush can easily be vegetatively propagated through cuttings. **Unfortunately it is largely uprooted and collected for fuel.**

### 1.4. Mountain slopes of the upper valleys including Nooristan province

In easteren province upper valleys similar ecological zones exist as under.

- In the south and south west of Nangarhar province along the lower sides of Spin Ghar.
- From Nazyan through all the Shinwar districts extending up to Hesarak, Bambakot, in the northeast Sotan and Barkot of Dara-i - Noor district.
- In Laghman province, Upper Alisheng and Alingar valleys.
- In Kunar province, Arith and Shomash valley of Noorgal, Dewagal valley of Chawki, Badil valley of Nerang, Gambeer and Kattar valleys in Watapoor, upper Pich valley including Chappa Darra and Gulsalak in Kunar province. Numbers of small villages are situated here and there nearby the vicinity of these areas. These areas are densely populated but the agricultural land is extremely limited. The people are traditionally involved in an animal husbandry for their life support. The socii- economic status and quality of life of the people, living in there is indeed poor. They are therefore dependent on the natural sloppy forest vegetation for their animal nutrition. The climatic conditions and pattern of vegetation of these slops, extremely varies from the

lower localities. The vegetation there is the function of topography, climate and relief. **Oleo- Reptonitum and Quercitum** stages are the most prominent Bioms of these slopes. The most important tree species growing there are:

<b>Botanical Name</b>	<b>English Name</b>	<b>Local Name</b>	<b>Uses</b>
<b>1. Fruit Trees</b>			
<i>Prunus armeniaca</i>	Apricot	زردالو	Fruit, Fodder & Fuel
<i>Pyrus malus</i>	Apple	سیب	Fruit, Fodder & Fuel
<i>Punica granatum</i>	Pomegranate	انار	Fruit, Fodder & Fuel
<i>Vitis vinifera</i>	Grape	انگور	Fruit, Fodder & Fuel
<i>Juglans regia</i>	Walnut	چهار مغز	Fruit, Fodder, Fuel & Timber
<b>2. Forest Trees</b>			
<i>Olea cuspidata</i>	Wild Olive	زيتون	Fodder, Fuel & Erosion Control
<i>Reptonia baxifolia</i>		گورگوری	Fodder, Fuel & Erosion Control
<i>Acacia modesta</i>	Akacia	پلوسہ	Fodder, Fuel & Erosion Control
<i>Pistacia khinjuk</i>	Wild Pistachio	شنسی	Fodder, Fuel & Erosion Control
<i>Quercus baloot</i>	Oak	خیری یا بلوط	Fodder, Fuel & Erosion Control
<i>Morus alba</i>	Mulberry	توت	Fruit, Fodder, Fuel, Timber & Shade
<i>Morus indica</i>	Black Mulberry	سیاه توت	Fruit, Fodder, Fuel, Timber & Shade
<i>Salix wallichiana</i>	Willow	بید	Fodder & Fuel
<i>Populus alba</i>	White poplar	سفیدار	Fodder, Fuel & Timber
<i>Platanus orientalis</i>		بنجہ چنار	Fodder, Fuel, Timber & Shade
<i>Alnus nitida</i>	Alder	وینتوک	Fodder & Fuel
<i>Fraxinus floribunda</i>	Ash	شنسی	Fodder & Fuel
<i>Ailanthus glandulosa</i>	Heaven tree	بید روسي	Fuel & Soil Conservation
<i>Robinia pseudoacacia</i>	black Locust	اکاسی گلدار	Fodder, Fuel & Soil Conservation
<i>Elaeagnus latifolia</i>	Russian olive	سنجد	Fodder & Fuel

Due to the heavy pressure of livestock, oak, Olive, Reptonia, Khinjuk and Acacia trees are badly browsed. Most of the slopes are overgrazed and degraded. In addition to over grazing and browsing, the Oak and olive trees are drastically lopped and fed to the animals. Moreover these trees are deadly cut for fuel also. In order to control erosion and preserve the further degradation of the environment it is extremely essential to stop cutting and carry on controlled lopping by rotational system.

### 1.5. Upper mountain ranges

The climatical conditions of upper mountain ranges of easteren provinces are quite different. The climate is temperate with high altitude between 1100- 2500 or 3000 msl. The amount of precipitation is above 1100 mm. Heavy snowfall during the winter. Precipitation is in the form of snow. These ranges hold a beautiful and valuable coniferous evergreen and broad-leaved forest. The most important tree species are:

<b>Botanical Name</b>	<b>English Name</b>	<b>Local Name</b>	<b>Uses</b>
<b>1. Natural Fruit Trees</b>			
<i>Pinus gerardiana</i>	Pine edible nut	جلغوزہ	Fruit & Timber
<i>Juglans regia</i>	Walnut	چهار مغز	Fodder, Timber & Fuel
<i>Diospyrus lotus</i>	Persimmon	املوک	Fruit, fodder & timber
<i>Corylus colerna</i>	Paroon almond	بادام پارونی	Fruit, fodder and fuel
<b>2. Forest Trees</b>			
<i>Pinus wallichiana</i>	Blue pine	نشتر	Timber
<i>Cedrus deodara</i>	Deodar	ارچہ	Timber
<i>Abies spectabilis</i>	Fir	بیجور	Timber
<i>Pecia smithiana</i>	Spruce	سرپ	Timber
<i>Quercus semicarpifolia</i>	Oak	غورہ خیری	Fodder & Fuel
<i>Quercus deletata</i>	Oak	سپیرہ خیری	Fodder & Fuel
<i>Asculus indica</i>	Horse chest nut	جوز	Fodder, Timber & Fuel
<i>Alnus nitida</i>	Alm	پشہ خانہ جنگلی	Fodder & Fuel
<b>3. Bushes</b>			
<i>Viburnum nervosum</i>		تولگی	Fodder & Fuel
<i>Fragaria spp.</i>	Ground mulberry	توت زمینی	Fodder

They are economically valuable forest trees. Unfortunately they are under the sever pressure of exploitation. They are in fact the natural sentinels of the environmental ecosystem. The preservation of such natural forest supports the natural protective mechanism for the preservation of lower valleys agriculture and social life. In order to contribute with the globule environmental conservation programme, the natural forest should be protected and maintained.

### Recommendations

Observational excursions, which I have conducted for the identification of fodder trees and bushes in Nangarhar Province, indicate that, fodder tree species are grown everywhere in all the Districts. The initial target of planting these trees was to create the greenery and shade spots, produce fuel and construction wood. But farmers consequently understood the fodder value of such trees and started to put them under such use also. The most common and valued tree species amongst all are:

- **Robinia pseudoacacia**
- **Morus spp.**
- **Salix spp.**
- **Populus spp.**
- **Elaeagnus latifolia**
- **Fraxinus floribunda**
- **Dalbergia sissoo**
- **Melia azedarach**
- **Leucaena leucocephala**

The wide adaptability and distribution of the above mentioned species, requirement of farmers, and the existing of high potential, they should be multiplied and extended in all over the districts.

## 2. KHOST PROVINCE

Khost is a southern province of Afghanistan sharing common borders with Paktia, Paktika and Pakistan. The climate of this province is sub-tropical semi-arid mediterranean with frost in the winter. Maximum annual temperature of Khost is 40 C° and minimum minus 2.8 C°. The annual precipitation is 582 mm. rainy season starts from January and last until May few showers in summer season. Wind velocity is approxi. 36 km/h. The elevation is 1185 MSL. The types of land with accordance to the vegetation pattern can be divided in to three main categories they are:

### 2.1 Plain and hilly cultivated land

It is more or less irrigated agricultural land intensively cultivated with field crops such as wheat, maize, barley, cotton, paddy, alfalfa clover, brassica, orchards, vegetables etc. It is in this category of land where farmers traditionally cultivate forest tree species along the irrigation canals, shade spots and marginal lands not suitable for agricultural crops. In order to get the clear picture of trees and bushes in and around the cultivated lands of Khost, it was indeed necessary to organize number of study tours to the representative districts of the Province. However the survey work was conducted in Tani Kut, Musa Khel, Zazimaidan, Bak, Yaqubi, Alisher, Laken and Esmail Khel districts. As far as the greenery condition is concerned, Tani Kut is extremely denuded and Esmail Khel is the most beautiful district of Khost Province. In general similar forestry tree species are growing in plain and hilly cultivated lands of the districts. The only difference one can see is the population of trees. In some districts as Esmail Khel and Laken trees are comparatively densely populated. Whereas in Tani Kut, Musa Khel, Zazimaidan etc. small number of trees are sparsely growing. The inventory survey of tree species standing in cultivated land has been conducted district wise. Because of the species similarity the following list is compiled for the whole Province.

#### Trees of Plain and Hilly Cultivated Land in Khost Province

Botanical Name	English Name	Local Name	Use
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<b>1. Fruit Trees</b>			
Ficus carica	Fig	انجیر	Fruit, Fodder & Fuel
Prunus armeniaca	Apricot	زردالو	Fruit, Fodder & Fuel
Prunus persica	Peach	شفالو	Fruit, Fodder & Fuel
Prunus communis	Plum	الوچہ	Fruit, Fodder & Fuel
Pyrus communis	Pear	ناک	Fruit, Fodder & Fuel
Pyrus malus	Apple	سیب	Fruit, Fodder & Fuel
Amygdalus spp.	Almond	بادام	Fruit, Fodder & Fuel
Punica granatum	Pomegranate	انار	Fruit, Fodder & Fuel
Vitis vinifera	Grape	انگور	Fruit, Fodder & Fuel
Eriobotrya japonica	Loquat	لوکات	Fruit, Fodder & Fuel
Cydonia vulgaris	Quince	بھی	Fruit, Fodder & Fuel
Citrus aurantium	Orange	نارنج	Fruit & Fuel
Citrus medica	Lemon	لیمو	Fruit & Fuel
Juglans regia	Walnut	چهار مغز	Fruit, Fodder, Fuel & Timber
Phoenix dactylifera	Date palm	خرما	Fruit & Fuel

<b>2. Forest Trees</b>			
Morus alba	Mulberry	توت	Fruit, Fodder, Fuel, Timber & Shade
Morus indica	Black Mulberry	سیاپوت	Fruit, Fodder, Fuel, Timber & Shade
Morus serrata	Mulberry	توت	Fruit, Fodder, Fuel, Timber & Shade
Salix wallichiana	Willow	بید	Fodder & Fuel
Salix babylonica	Weeping willow	مجنون بید	Fodder & Fuel
Populus alba	White poplar	سفیدار	Fodder, Fuel & Timber
Populus deltoides	Poplar	چنار	Fodder, Fuel & Timber
Eucalyptus globulus	Tasmanian Blue gum	یوکولپتس	Fuel & Timber
E. citriodora	Lemon scented gum	توکولپتس	Fuel & Timber
E. tereticornis	Forest Red gum	یوکولپتس	Fuel & Timber
Platanus orientalis		پینجه چنار	Fodder, Fuel, Timber & Shade
Dalbergia sissoo	Sissoo	شنگ	Fodder, Fuel & Timber
Fraxinus floribunda	Ash	شنگ	Fodder & Fuel
Ailanthus glandulosa	Heaven tree	بید روسي	Fuel & Soil Conservation

<b>2. Forest Trees</b>			
Robinia pseudoacacia	Black Locust	اکاسی گلدار	Fodder, Fuel & Soil Conservation
Cupressus torulosa	Himalyan cypress	سرو	Ornamental & Fuel
Pinus eldarica	Pine	ناجو	Ornamental, Timber & Fuel
Tamarix articulata	Tamarisk	گر	Fuel & Timber
Melia azedarach	Persian lilac	بکیان پا رنگان	Fodder, Timber, Fuel & Shade
Elaeagnus latifolia	Russian olive	سنجد	Fodder & Fuel
Zizyphus vulgaris	Berry	اناب	Fruit, fodder & fuel
<b>3. Ornamental Exotic</b>			
Gleditschia triacanthos		اکاسی خاردار	Fodder & Fuel
Catalpa. Spp.		کاتپا	Fodder & Fuel
Callistemon viminalis	Bottle Brush	گلیبید	Fuel & Beautification
Piper nigrum	Black peper	مرج سیاه	Beautification
Ulmus compestris		پشه خانه	Fuel & Beautification
Ulmus wallichiana		پشه خانه ازاد	Fuel & Beautification
Albizzia lebek	Albizia	البیزیا	Fodder & fuel
Maclura pomifera	Osage orange	نارنج بدل	Hadge, fodder & fuel
<b>4. Ornmental Bushes</b>			
Cercis griffithii	Red bud	ارغوان	Fodder & Beautification
Syringa emodi		یاسمن	Beautification
Jusminum revolutum	Jasmin	جسمین	Hadge
Thuja orientalis		مورپان	Hadge
Bouganvillaea glabra		غروس شب	Beautification
Rosa muscata		نسترن	Beautification
Hibiscus syriacus		گل توت	Beautification
Hibiscus mutabilis		گل غجاپ	Beautification

### Fruit bearing tree species

The Utilization manner of fruiting trees in Khost Province is quite similar to that of Nangarhar.

### Forest tree species

### **Ornamental exotic trees:**

A survey of Khost's recreational gardens, parks and roadside including city and suburbs was conducted. In addition to the trees mentioned the ornamental exotic are also identified therein.

**Ornamental Bushes:** They are planted in gardens for their beautification value.

### **2.2. Mountain slopes of the upper valleys**

In Khost province the upper Tani Kut, Musa Khel and Zadran valleys come under the similar ecological zones. These zones are situated:

The southern sideof Khost provinces Thor Ghar lower slopps. It is actually a proper Quercitum zone, which belongs to Tani community. More than 17 villages including Soor Kut are situated in this zone. Local understanding already recognizes the property contribution of each village. The agricultural land in Tani Kut is very scares. The life of people is totally dependent upon the livestock and animal husbandry. Agricultural residues for animal nutrition do not satisfy the demand. The most important source to provide animal diet is natural forest stand. The oak trees are traditionally loped and fed to animals during winter. Unfortunately the villagers from Narriza, Seengay and Atman villages have seriously started the cutting of oak trees from Charkunday and Mana Kundah for fuel supply to the market. The negative impact of such action have destroyed the forest area and increased the erosion problems. The animal nutrition source has been badly damaged and if continued will not be able to meet the nutrition demand at all. People of the other villages strictly obey the community decision and are strongly following the rotational utilization of oak forest for their animal nutrition.

In the North eastern part of the Province starting from Peeran or Mozghor villoge and extending up to Zoor Kut Musa Khel. This zone is densely populated but the agricultural land is extremely limited. The people are traditionally involved in an animal husbandry for their livelihood. They are therefore dependent on the natural sloppy forest vegetation for their animal nutrition. Oleo- Reptonitum and Quercitum are the most prominent Bioms of these slops. The Oleo- Reptonitum stage comes up in Tanya village. However Quercitum zone starts from Dowa Mada village and continues to the upper limits of Musa Khel valley. The important trees of this zone are:

<b>Botanical Name</b>	<b>English Name</b>	<b>Local Name</b>	<b>Uses</b>
<b>1. Fruit Trees</b>			
Punica granatum	Pomegranate	انار	Fruit, Fodder & Fuel
Vitis vinifera	Grape	انگور	Fruit, Fodder & Fuel
Juglans regia	Walnut	چار مغز	Fruit, Fodder, Fuel & Timber

<b>2. Forest Trees</b>			
Olea cuspidate	Wild Olive	زيتون	Fodder, Fuel & Erosion Control
Reptonia baxifolia		گوگوری	Fodder, Fuel & Erosion Control
Acacia modesta	Akacia	پلوسہ	Fodder, Fuel & Erosion Control
Pistacia khinjuk	Wild Pistachio	شنی	Fodder, Fuel & Erosion Control
Quercus baloot	Oak	بلوط	Fodder, Fuel & Erosion Control
Morus alba	Mulberry	نوت	Fruit, Fodder, Fuel, Timber & Shade
Salix wallichiana	Willow	بید	Fodder & Fuel
Populus alba	White poplar	سفیدار	Fodder, Fuel & Timber
Robinia pseudoacacia	Black Locust	اکاسی گلدار	Fodder, Fuel & Soil Conservation
Elaeagnus latifolia	Russian olive	سنجد	Fodder & Fuel
Cotoneaster bacillaris		شیر خشت	Fodder, fuel & soil conservation
Periploca calophylla		برڑہ	Fodder, fuel & soil conservation
Chamaerops ritchiana		مزری	Fodder, fuel & handicraft

All the above tree species and bush are very good fodders and largely used for animal diet. Because of the heavy pressure of livestock, trees are badly browsed. Most of the slopes are overgrazed and degraded. In addition to over grazing and browsing, the Oak and olive trees are drastically lopped and fed to the animals. Moreover the trees are deadly cut for fuel also. In order to control erosion and preserve the further degradation of the environment it is extremely essential to stop cutting and carry on controlled lopping by rotational system.

### 2.3. Vegetation of semi desert plains

These plains hold a semi-desertic and dry subtropical climate. The ligneous vegetation of such terrain has affinity with semidesertic subtropical vegetation. These plains are used as natural grazing land. Numbers of such desertic plains are visited to investigate the important plants. It is unfortunate to mention that in many places these plain are confronted to the conversion processing for agriculture. Based on the information collected, rain fed agriculture will be practiced in these converted areas.

- Daragay grazing land in Tani Kut District.
- Sara Teega grazing land of Matoon, Raghah and Bash Khel.
- Satiwan and Shawaya grazing land Zazimaidan.
- Speena Palla of Terizai District of Alishir.
- Kachi Azizkhan and Sarkundu Baba.
- Shinkay Ghar of Laken District.
- Sahra - e - Esmail Khel and Sahra- e - Mandozay.

These pieces of land hold extremely desolated natural ligneous and xerophytic bushes growing very happily. The most important species are as under.

<b>Botanical Name</b>	<b>English Name</b>	<b>Local Name</b>	<b>Uses</b>
<b>1. Forest Trees &amp; Bushes</b>			
Zizyphus muritiana	Wild berry	عناب ترش	Fuel & Fodder & Soil Conservation
Calotropis procera		سپلماي	Fuel & Soil Conservation
Peganum harmala		سفند	Soil Conservation Local Medicine & Fuel
Periploca calophylla		برره	Fuel, Goats Fodder & Soil Conser
Ephedra antermidia		بندک	Fuel, Goats Fodder & Soil Conser
Nerium oleander		اصيل گنديري	Fuel & Soil Conservation
Capparis spinosa		خار	Fodder, Fuel & Soil Conser.
Saccharum munja	Broom grass	جارو كبل	Cattle Fodder, Fuel & Soil Conser
Seidlitzia rasmarinus		زمى	Fuel & Soil Conservation
Alhagi camelorum	Camel bush	شتر خار	Camel Fodder, Fuel & Soil Conser
Chamaerops ritchiana		مزري	Fodder, fuel & handicraft
Reptonia baxifolia		گورى	Fodder & fuel
Corrisa opaca		مماني	Fodder & fuel
Artemisia herba-alba		ترخ	Fodder, fuel & soil conservation

#### 2.4. Upper mountain ranges

The climatical conditions of these ranges are quite different. The climate is Temperate with high altitude between 1100- 2500 or 3000 msl. The amount of precipitation is above 1100 mm. Heavy snowfall during the winter. Precipitation is in the form of snow. This range hold a beautiful and valuable coniferous evergreen and broad leaved forest. Seta Kandaw and upper Zadran valley is the best example of this zone. The most important plant species of this range are:

<b>Botanical Name</b>	<b>English Name</b>	<b>Local Name</b>	<b>Uses</b>
<b>1. Natural Fruit Trees</b>			
Pinus gerardiana	Pine edible nut	جلعوزه	Fruit & Timber
Juglans regia	Walnut	چارمغز	Fodder, Timber & Fuel
<b>2. Forest Trees</b>			

<i>Pinus wallichiana</i>	Blue pine	نشتر	Timber
<i>Cedrus deodara</i>	Deodar	المناخ	Timber
<i>Abies spectabilis</i>	Fir	بيجور	Timber
<i>Pecia smithiana</i>	spruce	سرپ	Timber
<i>Quercus semicarpifolia</i>	Oak	غوره سيرى	Fodder & Fuel
<i>Quercus deletata</i>	Oak	سپرہ سیری	Fodder & Fuel
<i>Asculus indica</i>	Horse chest nut	جوز	Fodder, Timber & Fuel
<i>Alnus nitida</i>	Alm	پشه خانه جنگلی	Fodder & Fuel
<b>3. Bushes</b>			
<i>Viburnum nervosum</i>		تورکگی	Fodder & Fuel
<i>Fragaria spp.</i>	Ground mulberry	توت زمینی	Fodder

They are economically valuable forest trees. Unfortunately confronted to the sever pressure of illegal exploitation.

### Recommendations

The following tree species are found to be very good fodder and showing a wide adoptability and distribution in all the Khost districts:

- ***Robinia pseudoacacia***
- ***Morus spp.***
- ***Salix spp.***
- ***Populus spp.***
- ***Elaeagnus latifolia***
- ***Fraxinus floribunda***
- ***Dalbergia sissoo***
- ***Melia azedarach***

With due regard to the wide adoptability and distribution, the requirement of farmers, and the existing of high potential, they should be multiplied and extended in all over the districts.

## 3. PAKTIA PROVINCE

Paktia is a southern province of Afghanistan sharing common borders with Khost, Logar, Paktika, Ghazni and Pakistan. The climate of this province is cold semi-arid mediterranean with heavy snow in the winter. Maximum annual temperature of Gardiz is 31.9 C° and minimum minus 10.8 C°. The annual precipitation is 362 mm in Gardiz. Rainy season starts from January and last until May. No rain in summer season. Winter is extremely cold. Snowfall starts from mid December and last until January. Wind velocity is approxi. 40-km/h in Gardiz. The elevation of Gardiz is 2503 MSL. The main involvement of the people is agriculture. Animal husbandry is the indispensable part of it. Animal nutrition demand is met from agricultural residues and direct grazing of animals in the natural pastureland. Mam

Prepared by Eng. Khaurin

made plantation of fruiting and forestry trees also contribute in animal nutrition. The types of land with accordance to the vegetation pattern can be divided in to three main categories they are:

### **3.1. Plain and hilly cultivated land**

It is more or less irrigated agricultural land intensively cultivated with field crops such as wheat, maize, barley, alfalfa, clover, brassica, orchards, vegetables etc. It is in this category of land where farmers traditionally cultivate forest tree species along the irrigation canals, shade spots and marginal lands not suitable for agricultural crops. The fruit bearing trees are also planted by farmer but in fertile and suitable soil. Paktia farmers throughout the provincial territory without exception practice the traditional manner of cultivation. In order to get the clear picture of trees and bushes in and around the cultivated lands of Paktia, it was indeed necessary to organise number of study tours to the representative districts and villages of the Province. However the survey work was conducted in Esa Khel, Fruz Khel, sayeed Karam, Chaparay, Zahoo, Terra, Sahak, Kulalgu and Zurmath district. As for as the greenery condition is concerned, Kulalgu is comparatively the most beautiful area of the Province. In general similar forestry tree species are growing in plains and hilly cultivated land of the districts. The inventory survey of tree species standing in cultivated land has been conducted district wise. Similar species of trees are growing in this province. Following list is compiled to indicate the tree species growing in **Paktia Province**.

<b>Botanical Name</b>	<b>English Name</b>	<b>Local Name</b>	<b>Use</b>
<b>1. Fruit Trees</b>			
<i>Prunus armeniaca</i>	Apricot	زدالو	Fruit, Fodder & Fuel
<i>Prunus communis</i>	Plum	ناک	Fruit, Fodder & Fuel
<i>Prunus persica</i>	Peach	شقانلو	Fruit, Fodder & Fuel
<i>Pyrus communis</i>	Pear	ناک	Fruit, Fodder & Fuel
<i>Pyrus malus</i>	Apple	سیب	Fruit, Fodder & Fuel
<i>Amygdalus buharica</i>	Almond	بادام	Fruit, Fodder & Fuel
<i>Punica granatum</i>	Pomegranate	انار	Fruit, Fodder & Fuel
<i>Vitis vinifera</i>	Grape	انگور	Fruit, Fodder & Fuel
<i>Cydonia vulgaris</i>	Quince	بھی	Fruit, Fodder & Fuel
<i>Juglans regia</i>	Walnut	چهار مغز	Fruit, Fodder, Fuel & Timber
<b>2. Forest Trees</b>			
<i>Morus alba</i>	Mulberry	توت	Fruit, Fodder, Fuel, Timber & Shade
<i>Salix wallichiana</i>	Willow	بید	Fodder & Fuel
<i>Salix babylonica</i>	Weeping willow	مجنون بید	Fodder & Fuel
<i>Populus alba</i>	White poplar	سفیدار	Fodder, Fuel & Timber
<i>Populus ciliata</i>	Poplar	نیله	Fodder, Fuel & Timber
<i>Populus nigra</i>	Black poplar	چنار	Fodder, Fuel & Timber
<i>Platanus orientalis</i>		بنجه چنار	Fodder, Fuel, Timber & Shade
<i>Fraxinus florigeranda</i>	Ash	شنگ	Fodder & Fuel
<i>Ailanthus glandulosa</i>	Heaven tree	بید روسي	Fuel & Soil Conservation
<i>Robinia pseudoacacia</i>	Black Locust	اکاسی گلدار	Fodder, Fuel & Soil Conservation
<i>Pinus heleensis</i>	Pine	ناجو	Ornamental, Timber & Fuel
<i>Elaeagnus latifolia</i>	Russian olive	ناجو	Fodder & Fuel
<i>Ulmus wallichiana</i>		پشه خانه	Fuel & Fodder
<i>Ulmus campestris</i>		پشه خانه چینائی	Fuel & Fodder
<b>3. Ornmental Trees &amp; Bushes</b>			
<i>Cercis griffithii</i>	Red bud	ارغوان	Fodder & Beautification
<i>Thuja orientalis</i>		مورپان	Hadge
<i>Rosa muscata</i>		نسترن	Beautification
<i>Hibiscus syriacus</i>		گل توت	Beautification
<i>Hibiscus mutabilis</i>		گل عجائب	Beautification

## Fruit bearing trees species

Growers apply similar mechanism inorder to fed the leaves of all other above mentioned fruit trees to their animals during late autumn or winter.

## Forest tree species

Amongst the above-mentioned forest trees, animals do not normally feed Ailanthus, Thuja and Pinus halepensis. Others are all fodder trees and largely used by animals during autumn and winter seasons.

**Ornamental Bushes:** They are planted for their beautification value.

### 3.2. Upper mountain ranges

This range is situated in the mountains of Hassan Khil of Zazi valley, and Chamkani districts. The climatical condition of this range is extremely different. The climate is Temperate with high altitude between 1100- 2500 or 3000 msl. The amount of precipitation is above 1100 mm. Heavy snowfall during the winter. Precipitation is in the form of snow. This range hold a beautiful and valuable coniferous evergreen and broad leaved forest. The most important plant species of this range are:

Botanical Name	English Name	Local Name	Uses
<b>1. Natural Fruit Trees</b>			
Pinus gerardiana	Pine edible nut	جلووزہ	Fruit & Timber
Juglans regia	Walnut	چارمغز	Fodder, Timber & Fuel
<b>2. Forest Trees</b>			
Pinus wallichiana	Blue pine	نشتر	Timber
Cedrus deodara	Deodar	المناخ	Timber
Abies spectabilis	Fir	بیجور	Timber
Pecia smithiana	Spruce	سرپ	Timber
Quercus semicarpifolia	Oak	غورہ سیری	Fodder & Fuel
Quercus deletata	Oak	سیرہ سیری	Fodder & Fuel
Alnus nitida	Alm	پشہ خانہ	Fodder & Fuel

Because of heavy and drastic cut these natural forests are in deplorable condition.

### 3.3. Natural Grazing plains

Grazing plains are situated in various parts of Paktia Province. Chapari, Rayees Khil, Zahoo, Sahak, Kolalgu, Mata Khan and Rohani are the main grazing plains. All of these plains are covered with thick layer of snow during the winter season where animal are not allowed to go out for grazing. The main bushes of plants growing in such plains are as under.

### **Vegetation of Natural Grazing Plains in Paktia Province.**

<b>Botanical Name</b>	<b>English Name</b>	<b>Local Name</b>	<b>Uses</b>
<b>1. Natural Bushes</b>			
<i>Acantholimon cabulicum</i>		کلاہ بته	Fodder, Fuel & Soil Fixation
<i>Salsola subaphylla</i>		چرگنس	Fodder, Fuel & Soil Fixation
<i>Artemisia herba alba</i>		ترخ	Fodder, Fuel & Soil Fixation
<i>Alhagi camelorum</i>		شتر خار	Fodder, Fuel & Foil Fixation
<i>Acanthophyllum spp.</i>		کلاہ بته	Fodder, Fuel & Foil Fixation
<i>Convolvulus spinosa</i>		کاون	Fodder, Fuel & Soil Fixation

The above mentioned plants are almost all thorny bushes, but very good fodder and grazed by small as well as large animals during spring and summer and autumn seasons. The conversion activities of grazing land to agriculture are conducted in these plains also.

### **Recommendations**

The following fodder tree species are widely distributed and adoptable to the locality conditions (climate, soil and topography) of all the Paktia Districts.

- ***Robinia pseudoacacia***
- ***Morus spp.***
- ***Salix spp.***
- ***Populus spp.***
- ***Elaeagnus latifolia***
- ***Fraxinus floribunda***

With due regard to the wide adoptability and distribution, the requirement of farmers, and the existing of high potential, they should be multiplied and extended in all over the districts.

## **4. THE GHAZNI PROVINCE**

Ghazni is an east central province of Afghanistan sharing common borders with Paktia,

Logar, Wardak, Bamyan, Zabul and Paktika. The climate of this province is cold semi-arid mediterranean with heavy snow in the winter. Maximum annual temperature is 33.5 C° and minimum minus 9.5 C°. The annual precipitation is 370 mm in Ghazni. Rainy season starts from January and last until May. No rain in summer season. Winter is extremely cold. Snowfall starts from mid December and last until January. Wind velocity is approxi. 40 km/h. The elevation of Ghazni is 2183 MSL. The main involvement of the people is agriculture. Animal husbandry is the indispensable part of it. Animal nutrition demand is met from agriculture residues and direct grazing of animals in the natural pastureland. Mam made plantation of fruiting and forestry trees also contribute in animal nutrition. The types of land with accordance to the vegetation pattern can be divided in to two main categories they are:

#### **4.1 Plain and hilly cultivated land**

Flat land is not abundant and occurs in narrow valleys. More or less irrigated. Agricultural land is intensively cultivated with field crops such as wheat, maize, barley, alfalfa, clover, orchards, vegetables etc. It is in this category of land where farmers traditionally cultivate forest tree species along the irrigation canals and marginal lands not suitable for agricultural crops. The fruit bearing trees are also planted by farmer but in fertile soil and suitable sites. Ghazni farmers in throughout provincial territory, without exception, practice the traditional manner of cultivation. In order to get the clear picture of trees and bushes in and around the cultivated lands of Ghazni, it was indeed necessary to organise number of study tours to the representative districts and villages where animal husbandry practices are comparably intensive in the Province. However the survey work was conducted in Khoja Omari, Jaghatu (Deh Allidad, Deh Mirak, Deh Noori and Gul Bawri villages), Zana Khan, Nani of Andar, Thah Sang and Ramak Districts. Couple of excursions to Quarabaghi and zeyarat village also took place. As for as the greenery status is concerned, Khoja Omari and Ramak are comparably the most beautiful areas of the Province. However Jaghatu is the remotest and poorest valley of Ghazni province. Generally, similar forestry tree species are growing in plains and hilly cultivated land of the districts. The only difference one can see is the population of trees. In some districts as Khoja Omari, Ramak and Quarabagh various species of trees are comparatively densely populated. Whereas in Andar district and Jaghatu valley small number of trees have been sparsely grown. The main reason for such condition was told to be the limitation of irrigation water. The root cause of water shortage in both the districts was because of the destruction of Karizes, which have been collapsed during long lasting war in country. There is a strong and concrete hope among the farmers that by the rehabilitation of Karizes trees plantation movement will also increase. The inventory survey of tree species standing in cultivated land has been conducted district wise. Following compiled list indicates the tree species growing in Ghazni Province.

**Trees of Plain and Hilly Cultivated Land in Ghazni Province**

<b>Botanical Name</b>	<b>English Name</b>	<b>Local Name</b>	<b>Uses</b>
<b>1. Fruit Trees</b>			
<i>Prunus armeniaca</i>	Apricot	زدالو	Fruit, Fodder & Fuel
<i>Prunus communis</i>	Plum	الوجه	Fruit, Fodder & Fuel
<i>Prunus persica</i>	Peach	شقفالو	Fruit, Fodder & Fuel
<i>Pyrus communis</i>	Pear	ناک	Fruit, Fodder & Fuel
<i>Pyrus malus</i>	Apple	سیب	Fruit, Fodder & Fuel
<i>Amygdalus buharica</i>	Almond	بادام	Fruit, Fodder & Fuel
<i>Vitis vinifera</i>	Grape	انگور	Fruit, Fodder & Fuel
<i>Juglans regia</i>	Walnut	بادام	Fruit, Fodder, Fuel & Timber
<b>2. Forest Trees</b>			
<i>Morus alba</i>	Mulberry	نوت	Fruit, Fodder, Fuel, Timber, Shade
<i>Salix wallichiana</i>	Willow	بید	Fodder & Fuel
<i>Salix babylonica</i>	Weeping willow	مجنون بید	Fodder & Fuel
<i>Populus alba</i>	White poplar	سفیدار	Fodder, Fuel & Timber
<i>Populus ciliata</i>	Poplar	نیله	Fodder, Fuel & Timber
<i>Populus nigra</i>	Black poplar	چنار	Fodder, Fuel & Timber
<i>Platanus orientalis</i>		پنجه چنار	Fodder, Fuel, Timber & Shade
<i>Fraxinus floribunda</i>	Ash	شنگ	Fodder & Fuel
<i>Ailanthus glandulosa</i>	Heaven tree	بید روسي	Fuel & Soil Conservation
<i>Robinia pseudoacacia</i>	Black Locust	اکاسی	Fodder, Fuel & Soil Conservation
<i>Pinus halepensis</i>	Pine	ناجو	Ornamental, Timber & Fuel
<i>Elaeagnus latifolia</i>	Russian olive	سنجد	Fodder & Fuel
<i>Ulms wallichiana</i>		پشه خانه ازاد	Fuel & Fodder
<i>Ulmus compestris</i>		پشه خانه خمره ائی	Fuel & Fodder
<b>3. Ornmental Trees &amp; Bushes</b>			
<i>Cercis griffithii</i>	Red bud	ارغوان	Fodder & Beautification
<i>Thuja orientalis</i>		مورپان	Hadge
<i>Rosa muscata</i>		نسترن	Beautification
<i>Hibiscus syriacus</i>		گلتوت	Beautification
<i>Hibiscus mutabilis</i>		گل عجائب	Beautification
<i>Lagestrum spp.</i>		بید ایرانی	Hadge, Fodder & Fuel
<i>Jusminum revolutum</i>	Jusmin	یاسمن	Beautification & Hadge

## Fruit bearing trees species

Ghazni farmers normally do not practice to preserve the leaves for animal nutrition during winter. They only allow the animals to graze on leaves, which fall during late autumn from deciduous trees on the ground. They also shed the leaves by beating the branches with long wooden sticks or shave the trees to collect leaves and fed them to the animals in fresh form during autumn. Shaved and collected Leaves are fed only to small animals.

## Forest tree species

Amongst the above-mentioned forest trees, animals do not normally feed Ailanthus and Pinus halepensis. Others are all fodder trees and largely used by animals during autumn season in fresh form.

**Ornamental Bushes:** They are planted for their beautification value.

### 4.2. Natural Grazing plains

Grazing plains are usually situated around each district of the province. These plains are traditionally used for grazing of animals. Nomads as well graze their animal herds in these areas. All of these plains are covered with thick layer of snow during the winter season where animal are not allowed to go out for grazing. The main bushy types of plants growing in such plains are as under.

Botanical Name	English	Local Name	Uses
<b>Natural Bushes</b>			
Acantholimon		کلاہ بته	Fodder, Fuel & Soil fixation
Salsola subaphylla		چرگس	Fodder, Fuel & Soil fixation
Artemisia herba alba		ترخ	Fodder, Fuel & Soil fixation
Alhagi camelorum		شتر خار	Fodder, Fuel & Soil fixation
Acanthophyllum spp.		کلاہ بته	Fodder, Fuel & Soil fixation
Peganum harmala		سفند	Fodder, Fuel & Soil fixation
Convolvulus spinosa		کاون	Fodder, Fuel & Soil fixation
Bromus spp.	Broom grass	جارو	Fodder, Fuel & Soil fixation
Glycerhizia glabra	Glycer	شیرین بویه	Fodder, Fuel & Soil fixation
Vitex negondi		مروندی	Fodder, Fuel & Soil fixation
Hippophea spp.	Buck thorn	بته خار	Fodder, Fuel & Soil fixation

The above mentioned plants are almost all thorny bushes, but very good fodder and grazed by small as well as large animals during spring and summer seasons. The conversion activities of grazing land to agriculture are conducted in these plains also.

**NOTE: THE VEGETATION OF CULTIVATED LAND AND NATURAL PLAINS OF ZABUL PROVINCE IS SIMILAR TO THE GHAZNI PROVINCE**

## **Recommendations**

The following fodder tree species are widely distributed and adoptable to the locality conditions (climate, soil, topography) of all the Gazni Districts.

- **Robinia pseudoacacia**
- **Morus spp.**
- **Salix spp.**
- **Populus spp.**
- **Elaeagnus latifolia**
- **Froxinus floribunda**

The most common fodder trees recommended are also listed in the conclusion and the details of climate tolerance etc are discussed in Annex No. 1

With due regard to the wide adoptability and distribution, the requirement of farmers, and the existing of high potential, they should be multiplied and extended in all over the districts.

## **5. HELMAND PROVINCE**

Helmand is a southwestern province of Afghanistan sharing common borders with Kandahar, Nimroz, Farah, Ghor, Urozgan and Iran. This province holds a hot sub-tropical desert climate. Maximum annual temperature is 48 C° and minimum 4.3 C°. The annual precipitation of Lashkargah is 76.2 mm. rainy season starts from January and last until May. No rain in summer season. Summer is extremely hot. Wind velocity is approxi. 40 km/h. The elevation of Lashkargah is 780 MSL. Most of the people of Helmand Province are immigrants. Their main involvement is agriculture and animal husbandry.

In addition to this Helmand is the top most important Province from the point of view of pasture area for nomads. Helmand with a modern infrastructure was before the war, the most highly mechanised area in the country. This Province has had the most developed integrated agricultural programme. Extremely strong and well-managed animal husbandry, Veterinary, Forestry and Horticulture sectors were promulgated and extended throughout the province. When the project was running in its full capacity and full pressure of work, Lashkergah the capital city of Helmand was so beautiful as it was named a small United State. I was affright and afflicted to see the Lashkergah city now. Every advanced and technical succession has been changed to retrogression. Farmers of Helmand have restarted the traditional agriculture practices. The animal nutrition demand is more or less met through agricultural resources and direct grazing of animals in the natural pasture. Fruit bearing and forestry trees contribute very little in animal nutrition. The types of land with accordance to the vegetation pattern can be divided in to two main categories they are:

### **5.1. Agricultural cultivated land**

The agriculture land of Helmand is mainly flat. More or less irrigated. It is cultivated with field

crops such as poppy (intensively), wheat, maize, barley, alfalfa, clover, orchards, vegetables etc. Planting of forestry tree species along the irrigation canals and marginal lands is the common practice of farmers. It should be mentioned that during the long last war such plantations have been largely and badly damaged. By the repatriation of farmers this activity is again started. The fruit bearing trees are also planted by farmer but in fertile soil and suitable sites. In order to get the clear picture of trees and bushes in and around the cultivated lands of Helmand, I have organized number of study tours to the representative Districts and villages. However the survey work was conducted in Bolan, Mombashyan, Khalaj, Bost villages, Naqil Abad village of Nadi Alli District, Central and Deh Adam Khan villages of Nahre Seraj or Grishk District, Nawzad District and Hazarjuft of Garam Ser or Darweshan District. Nawzad, Nahre Seraj and Cha-e-Anjeer are comparably the most beautiful areas of the Province. Whereas the Nadi Alli is the remotest and poorest District. Generally, similar forestry tree species are growing in plains. The only difference one can see is the population of trees. In some districts as Nawzad and Cha-e-Anjeer various species of trees are comparatively densely populated. Whereas in Nadi Alli District small number of trees have been sparsely grown. The main reason for such condition was told to be the cutting back of trees during war. There is a strong hope among the farmers that they will soon take up trees plantation activities in suitable areas of their farms. The inventory survey of tree species standing in cultivated land has been conducted District wise. Following compiled list indicates the tree species growing in Helmand Province.

### Trees of Agricultural Cultivated Land in Helmand Province

<b>Botanical Name</b>	<b>English Name</b>	<b>Local Name</b>	<b>Uses</b>
<b>1. Fruit Trees</b>			
Ficus carica	Fig	انجیر	Fruit, Fodder & Fuel
Prunus armeniaca	Apricot	زردالو	Fruit, Fodder & Fuel
Prunus communis	Plum	الوجه	Fruit, Fodder & Fuel
Prunus persica	Peach	شفتالو	Fruit, Fodder & Fuel
Pyrus communis	Pear	ناک	Fruit, Fodder & Fuel
Pyrus malus	Apple	سیب	Fruit, Fodder & Fuel
Amygdalus buharica	Almond	بادام	Fruit, Fodder & Fuel
Vitis vinifera	Grape	انگور	Fruit, Fodder & Fuel
Juglans regia	Walnut	چارمغز	Fruit, Fodder, Fuel & Timber
Punica granatum	Pomegranat	انار	Fruit, Fodder & Fuel
<b>2. Forest Trees</b>			
Morus alba	Mulberry	نوت	Fruit, Fodder, Fuel, Timber, Shade
Salix wallichiana	Willow	بید	Fodder & Fuel
<b>2. Forest Trees</b>			
Salix babylonica	Weeping	مجنون بید	Fodder & Fuel

	willow		
Populus alba	White poplar	سفیدار	Fodder, Fuel & Timber
Populus ciliata	Poplar	نیله	Fodder, Fuel & Timber
Populus euphratica	Poplar	پدہ	Fodder & Fuel
Populus nigra	Black poplar	چنار	Fodder, Fuel & Timber
Platanus orientalis		پنجہ چنار	Fodder, Fuel, Timber & Shade
Fraxinus floribunda	Ash	شنگ	Fodder & Fuel
Ailanthus glandulosa	Heaven tree	بید روسي	Fuel & Soil conservation
Robinia pseudoacacia	Black Locust	اکاسی گلدار	Fodder, Fuel & Soil Conservation
Pinus halepensis	Pine	ناجو	Ornamental, Timber & Fuel
Elaeagnus latifolia	Russian olive	سنجد	Fodder & Fuel
Ulmus wallichiana		پشه خانه از اراد	Fuel & Fodder
Ulmus compestris		پشه خانه خمره ائی	Fuel & Fodder
Melia azedarach	Persian lilac	بکیان	Fodder, Fuel & Timber
Dalbergia sissoo	Sissoo	شیشم	Fodder, Fuel & Timber
<b>3. Ornmental Trees &amp; Bushes</b>			
Cercis griffithii	Red bud	ارغوان	Fodder & Beautification
Thuja orientalis		مورپان	Hadge
Rosa muscata		نسترن	Beautification
Hibiscus syriacus		گل توت	Beautification
Hibiscus mutabilis		گل عجایب	Beautification
Lagestrum spp.		بید ایرانی	Hadge, Fodder & Fuel
Jusminum revolutum	Jusmin	پاسمن	Beautification & Hadge

### Fruit bearing trees species

In Helmand province only Nawzad farmers are used to the collection and preservation of leaves for animal nutrition for the winter season. Whereas in this Province, the animals are normally allowed to graze on leaves which fall during late autumn from deciduous trees on the ground. They also shed the leaves by beating the branches with wooden sticks or shave the trees to collect leaves and fed them to the animals in fresh form during autumn. Shaved and collected Leaves are fed only to small animals.

### Forest tree species

Amongst the above-mentioned forest trees, animals do not normally feed Ailanthus and Pinus heleensis. Others are all fodder trees and largely used by animals during autumn season in fresh form.

**Ornamental Bushes:** They are planted for their beautification value.

### 5.2. Desert plains or steppes

Steppes are the most important grazing areas of the nomads. Are usually situated around each district of the province. These plains are traditionally used for grazing of animals. A very open vegetation of permanent natural bushes dominates these plains.

Botanical Name	English	Local	Uses
<b>Vegetation of Desert</b>			
Acantholimon		کلاہ بته	Fodder, Fuel & Soil fixation
Salsola subaphylla		چرگس	Fodder, Fuel & Soil fixation
Artemisia herba alba		ترخ	Fodder, Fuel & Soil fixation
Alhagi camelorum		شتر خار	Fodder, Fuel & Soil fixation
Acanthophyllum spp.		کلاہ بته	Fodder, Fuel & Soil fixation
Peganum harmala		سفند	Fodder, Fuel & Soil fixation
Convolvulus spinosa		کاون	Fodder, Fuel & Soil fixation
Bromus spp.	Broom grass	جارو	Fodder, Fuel & Soil fixation
Glycerhizia glabra	Glycer	شیرین بویه	Fodder, Fuel & Soil fixation
Vitex negundo		مروندی	Fodder, Fuel & Soil fixation
Hippophea spp.	Buck thorn	بته خار	Fodder, Fuel & Soil fixation

The above-mentioned plants are almost all thorny bushes, but very good fodder and grazed by small as well as large animals throughout the year. The composition is varying variable and depends upon the humidity, length of winter, sand composition, wind velocity, and grazing pressure. More humid places are denser vegetated with a species richer composition. The conversion activities of these plains to agriculture are conducted in Helmand also.

### Recommendations

The following fodder tree species are widely distributed and adoptable to the locality conditions (climate, soil, topography) of all the Helmand Districts.

- **Robinia pseudoacacia**
- **Salix spp.**
- **Populus spp.**
- **Morus spp.**
- **Elaeagnus latifolia**
- **Dalbergia sissoo**
- **Melia azedarach**

NOTE: **THE VEGATATION PATTERN OF KANDAHAR AND OROZGAN PROVINCES**

## **ARE SIMILAR TO HEMAND PROVINCE.**

The most common fodder trees recommended are also listed in the conclusion and the details of climate tollerance etc are discussed in Annex No. 1. With due regard to the wide adoptability and distribution, the requirement of farmers, and the existing of high potential, they should be multiplied and extended in all over the districts.

## **6. FARAH PROVINCE**

Farah is a southwestern province of Afghanistan. The provincial buondries of this area touch upon Herat Province in the north, Ghor in the northeast, Helmand province in the east and Iran in the west. The elevation of the province is 660 m. from the sea level and holds a hot sub- tropical dry desert climate. Maximum annual temperature is 48 C° and minimum minus 2 C°. The annual precipitation of Farah is 70 mm as an average. Rainy season starts from January and last until May. No rain in summer season. Summer is extremely hot. However the northern hilly districts of Farah Province have different climate. There is a cold winter with snow at the higher altitudes in Gulistan and Purchaman districts with 1400 and 1900 m elevations respectively; the semi- nomad population grazes their flocks in the hill districts in summer and in winter move down to Baboos and Garmser for the warmer climate and food for their flocks and herds. In summer the heat owing to the surrounding deserts, is very great in the southern part of the province, and in winter there is considerable cold with frost at night. A strong north wind often blows in summer, which is long and very hot. This seasonal strong north wind blows for 120 days from the 15th May to 15th September. The velocity of wind is approxi. 80 km/h. The floods, due to the melting of snows, come in March and April, after which the climate is extremely hot. Farah people are mostly involved in agriculture and animal husbandry.

In addition to this Farah is the most important Province from the point of view of pasture area for nomads. Farmers of Farah have restarted the traditional agriculture practices. The animal nutrition demand is more or less met through agricultural resources and direct grazing of animals in the natural pasture. Due to the heavy damages occurred to fruit bearing and forestry trees during the war, they contribute very little in animal nutrition. The types of land in accordance with the vegetation pattern can be divided in to three main categories they are:

### **6.1. Plain and hilly Agricultural cultivated land**

The agriculture land of Farah is intensely cultivated with field crops, such as wheat, barley, maize and rice. Wheat production remains the main source of income to the local population of Farah. Wheat seed varieties commonly used are Maxi- Pak 17000 and Bakhter. Wheat and barley are the most common winter crops, while maize is grown during the spring season. The nomads to feed their animals usually purchase barley. Alfalfa and clover are used as forage crops for seed production or animal feed. Orchards of fruit crops such as grapes, pomegranate, apples, almonds, mulberries, figs, apricots have decreased in quantity during the war due to the lack of proper maintenance. Vegetables such as onion, turnip, spinach etc are also grown in Farah province. Planting of forestry tree species along the irrigation canals and marginal lands was the common practice of farmers. However

during the long last war such plantations have been largely and badly damaged. By the repatriation of farmers this activity is again started. In order to get the clear picture of trees and bushes in and around the cultivated lands of Farah province, I have organized number of study tours to the representative districts and villages. However the survey work was conducted in Khak-e- Safid, Anar Darah, Zehkeen, Pusht-e- Rud, Bakwa, Farah Rud, Bala Balouk districts and Bagh-e-Pul, ginakan, Darabad, Koksheb, Kokbala, Raj, Kariz-e- Naw, Tojeg, Dehyak, Soor, Shorab, Thewesk, Nawdeh and Kohdanak villages and road side plantation of Farah city.

Amongst all the Bala Balouk, Anar Darah and Gulistan districts and Ginakan and Darabad villages including Baghi Pul and Farah city are comparably the most beautiful areas of the Province. However the Khak-e- Safid and Bakwa are the remotest districts. In general, similar forest tree species are growing in Agriculture cultivated plains. The only difference one can see is the population of trees. In some districts as Bala Balouk, Gulistan districts and the Baghi Pul recreational garden various species of trees are comparatively densely populated. Whereas in other places small number of trees have been sparsely grown. The main reason for such condition was told to be the cutting back of trees during war. There is a strong hope among the farmers that they will vary soon take up trees plantation activities in suitable areas of their farms. The inventory survey of tree species standing in cultivated land has been conducted district wise. Following is the compiled list, which indicates the tree species growing in Farah Province.

<b>Botanical Name</b>	<b>English Name</b>	<b>Local Name</b>	<b>Uses</b>
<b>1. Fruit Trees</b>			
Ficus carica	Fig	انجیر	Fruit, Fodder & Fuel
Prunus armeniaca	Apricot	زردالو	Fruit, Fodder & Fuel
Prunus communis	Plum	لوچه	Fruit, Fodder & Fuel
Prunus persica	Peach	شفتالو	Fruit, Fodder & Fuel
Pyrus communis	Pear	ناک	Fruit, Fodder & Fuel
Pyrus malus	Apple	سیب	Fruit, Fodder & Fuel
Amygdalus buharica	Almond	بادام	Fruit, Fodder & Fuel
Vitis vinifera	Grape	انگور	Fruit, Fodder & Fuel
Juglans regia	Walnut	چارمغز	Fruit, Fodder, Fuel & Timber
Punica granatum	Pomegranat	انار	Fruit, Fodder & Fuel
Zizyphus vulgaris	berry	عناب	Fruit, Fodder & Fuel
Phoenix dactylifera	date plam	خرما	Fruit & Fuel
sydonia vulgaris	quince	بهی	Fruit, Fodder & Fuel
<b>2. Forest Trees</b>			
Morus alba	Mulberry	توت	Fruit, Fodder, Fuel, Timber & Shade

<i>Salix wallichiana</i>	Willow	بید	Fodder & Fuel
<i>Salix babylonica</i>	Weeping willow	مجنون بید	Fodder & Fuel
<i>Populus alba</i>	White poplar	سفیدار	Fodder, Fuel & Timber
<i>Populus ciliata</i>	Poplar	نیله	Fodder, Fuel & Timber
<i>Populus euphratica</i>	Poplar	پدہ	Fodder & Fuel
<i>Populus nigra</i>	Black poplar	انار	Fodder, Fuel & Timber
<i>Platanus orientalis</i>	Plane tree	پنجه چنار	Fodder, Fuel, Timber & Shade
<i>Fraxinus floribunda</i>	Ash	شنگ	Fodder & Fuel
<i>Ailanthus glandulosa</i>	Heaven tree	بید روسي	Fuel & Soil conservation
<i>Robinia pseudoacacia</i>	Black Locust	اکاسی گلدار	Fodder, Fuel & Soil conservation
<i>Pinus halepensis</i>	Pine	ناجو	Ornamental, Timber & Fuel
<i>Elaeagnus latifolia</i>	Russian olive	سنجد	Fodder & Fuel
<i>Ulmus wallichiana</i>		پشه خانه	Fuel & Fodder
<i>Ulmus compestris</i>		پشه خانه خمره ائی	Fuel & Fodder
<i>Melia azedarach</i>	Persian lilac	بکیان	Fodder, Fuel & Timber
<i>Dalbergia sissoo</i>	Sissoo	شیشم	Fodder, Fuel & Timber
<i>Tamarix glica</i>	Tamarisk	کوره گز	Timber, Fuel & Fodder
<i>Catalpa spp.</i>		برگ دم	Fodder, Fuel & Timber
<i>Gleditschia triacanthos</i>		اکاسی خاردار	Fodder, Fuel and Timber
<i>Albizia procera</i>		خار خستک	Fodder, Fuel & Timber
<b>3. Ornmental Bushes &amp; Trees</b>			
<i>Cercis griffithii</i>	Red bud	ارغوان	Fodder & Beautification
<i>Thuja orientalis</i>		مورپان	Hadge
<i>Rosa muscata</i>		نسترن	Beautification
<i>Hibiscus syriacus</i>		گلتوت	Beautification
<i>Myrrhus communis</i>		موارت یا مانو	Beautification & Medicine
<i>Lagestrum spp.</i>		بید ایرانی	Hadge, Fodder & Fuel
<i>Cupressus torulosa</i>	Cypress	سرو	Beautification & Timber
<i>Nerium oleander</i>		گندیری	Beautification & Hadge
<i>Vitex negundo</i>		مرونی	Soil conservation & Hadge
<i>Haloxylon</i>	Saxaoul	سکساول	Soil conservation &

<i>persicum</i>			Beautification
<i>Citrus medica</i>	Lemon	ليمون	Fruit, Fuel & Beautification
<i>Callistemon viminalis</i>	Bottle brush	گلپید	Fuel & Beautification
<i>Jusminum revolutum</i>	Jusmin	یاسمن	Beautification & Hadge

### Fruit bearing trees species

In Farah province Bala Balouk farmers are used to the collection and preservation of leaves for animal nutrition for the winter season. Whereas in this Province, the animals are normally allowed to graze on leaves which fall during late autumn from deciduous trees on the ground. They also shed the leaves by beating the branches with wooden sticks or shave the Muberry trees to collect leaves and fed them to the animals in fresh form during autumn. Shaved and collected Leaves are fed only to small animals.

### Forest tree species

Amongst the above mentioned forest trees, *Ailanthus* and *Pinus halepensis* are not normally fed by animals. Others are all fodder trees and largely used by animals during autumn season in fresh form.

**Ornamental Bushes:** They are Planted for their beautification value.

### 6.2. Desert plains

Desert plains are the most important grazing areas of the nomads. They are usually situated around each district of the province. These plains are traditionally used for grazing of animals. These plains are dominated by a very open vegetation of permanent bushes as under.

Botanical Name	English	Local Name	Uses
<b>1. Forest Trees</b>			
<i>Tamarix glica</i>	Temarisk	کوره گز	Fuel, Fodder & Timber
<b>2. Natural Bushes</b>			
<i>Acantholimon</i>		تارون	Fodder, Fuel & Soil fixation
<i>Salsola subaphylla</i>		چرگس	Fodder, Fuel & Soil fixation
<i>Artemisia herba alba</i>		ترخ	Fodder, Fuel & Soil fixation
<i>Alhagi camelorum</i>		شتر خار	Fodder, Fuel & Soil fixation
<i>Acanthophyllum spp.</i>		کلابنه	Fodder, Fuel & Soil fixation
<i>Peganum harmala</i>		سیند	Fodder, Fuel & Soil fixation
<i>Convolvulus spinosa</i>		گوره	Fodder, Fuel & Soil fixation
<i>Bromus spp.</i>	Broom grass	کرتہ	Fodder, Fuel & Soil fixation

<i>Glycerhizia glabra</i>	Glycer	شیرین بویه	Fodder, Fuel & Soil fixation
<i>Vitex negondu</i>		مرونبی	Fodder, Fuel & Soil fixation
<i>Hippophea spp.</i>	Buck thorn	بته خار	Fodder, Fuel & Soil fixation
<i>Arteplix spp.</i>	salty bush	غرنگی	Fodder, Fuel & Soil conservation
<i>Periploca calophyla</i>		اومه یا برره	Fodder, Fuel & Soil conservation
<i>Suedea spp.</i>		یک مانی	Fodder, Fuel & Soil conservation
<i>Caparis spinosa</i>		کچ خار	Fodder, Fuel & Soil conservation
<i>Romix spp.</i>		تروکی	Fodder, Fuel & Soil conservation

The above-mentioned plants are almost all thorny bushes, but very good fodder and grazed by small as well as large animals throughout the year. The composition is vary variable and depends upon the humidity, length of winter, sand composition, wind velocity, and grazing pressure. More humid places are denser vegetated with a richer species composition. Large area of these plains is converted in to agricultural land in Bakwa, Khak-e- Safid and Pusht-e- Rud districts. Karizes and Shallow wells are used to irrigate such areas.

### 6.3. Upper mountain ranges

The elevation of Gulistan and Purchaman and northern mountains of Farah constitute the upper ranges of this province. The most important tree vegetation of this range has been included in the following table

Botanical Name	English Name	Local Name	Uses
<b>1. Natural Fruit Trees</b>			
<i>Pistacia Khinjuk</i>	Khinjuk	Shanai	Fruit, Fodder & Fuel
<i>P. atlantica</i>		کسور	Fruit, Fodder & Fuel
<b>2. Forest Trees &amp; bushes</b>			
<i>Juniperus excelsa</i>	Juniper	ارچه	Timber, Fuel, Char- coal & Soil conservation
<i>Cotoneaster bacillaris</i>		شیر خشت	Fodder, Fuel & Soil conservation
<i>Berberis aristata</i>	Berbery	زرک	Fodder, Fuel & Soil Conservation
<i>Rubus spp.</i>		کروره	Fodder, Fuel & Soil conservation
<i>Corylus colerna</i>		بادام پارون	Fodder, Fuel, Fruit & Soil conservation
<i>Ficus nigra</i>	Fig	انجیر	Fodder, Fuel & Fruit
<i>Rhum alpinum</i>		رواش	Fodder & Vegetable
<i>Glycerhizia glubra</i>	Glycer	شیرین بویه	Fodder, Fuel & Medicine

Because of heavy and drastic cut these natural forests are in deplorable condition.

## Recommendations

The following fodder tree species are widely distributed and adoptable to the locality conditions (climate, soil, topography) of all the Farah Districts.

- **Robinia pseudoacacia**
- **Morus spp.**
- **Salix wallichiana**
- **Populus celiata**
- **Elaeagnus latifolia**
- **Fraxinus floribunda**
- **Dalbergia sissoo**
- **Melia azedarach**

***NOTE: THE VEGATATION OF PATTERN OF NIMROOZ PROVINCE IS SIMILAR TO THAT OF FARAH PROVINCE***

The most common fodder trees recommended are also listed in the conclusion and the details of climate tolerance etc are discussed in. The wide adoptability and distribution, the requirement of farmers, and the existing of high potential, they should be multiplied and extended in all over the districts.

## 7. HERAT PROVINCE

Herat is a northwestern province of Afghanistan. Its main boundry on the north is Turkmanistan, on the northeast Badghis province, on the south Ghor province, on the south Farah province and on the west is Iran. The elevation of the provincial center is 930 m. from the sea level. Winter is cold in the t with more or less snow, but it does not remain for long. By May the rainfall ends, but the northerly winds sets and continues for 120 days until May. In fact there seems to be always more or less wind in Herat valley. During the summer months the wind is very strong, being always highest after sunset. When the wind is not blowing the summer heat in Herat valley is great. Mean maximum annual temperature is  $28.9^{\circ}\text{C}$  and mean minimum minus  $0.6^{\circ}\text{C}$ . The annual precipitation of Herat valley is 220 mm as an average. The first frost occurs in the begining of November. The last freeze come about in the end of March. There are 226 frost-free days. No rain in summer season. Herat people are mostly involved in agriculture and animal husbandry.

This province also contains great pasture area for nomads. The animal nutrition demand is more or less met through agricultural resources and direct grazing of animals in the natural pasture. Due to the heavy damages occured to fruit bearing and forestry trees during the war, they contribute very little in animal nutrition. The types of land in accordance with the vegetation pattern can be divided in to three main categories they are:

### 7.1. Plain and hilly Agricultural cultivated land

The agriculture land of Herat is intensely cultivated with field crops, such as wheat, barley,

maize and rice. Wheat producton remains the main source of income the local population of Herat. Wheat and barley are the most common winter crops. The nomads to feed their animals usually purchase barley. Alfalfa and clover are used as forage crops for animal feed. Orchards of fruit crops such as **grapes, pomegranate, apples, almonds, mulberries, figs, and apricots** have decreased in quantity during the war due to the lack of proper maintenance applying of technical measures. Vegetables such as **onion, turnip, spinach** etc are also growing in Herat province. Planting of forestry tree species along the irrigation canals and marginal lands is the common practice of farmers. However during the long last war such plantations have been largely and badly damaged. By the repatriation of farmers this activity is again started. In order to get the clear picture of trees and bushes in and around the cultivated lands of Herat province, I have organized number of study tours to the representative Districts and villages. However the survey work was conducted in Gozara, Enjil, Pashtoon Zarghun, Karukh, Zendajan, Ghoryan, Adraskan and Rubat-e- Sangi districts and Urdo Bagh Agricultural Farm of ARAA Herat City Avenue and recreational plantations.

Amongst all the most populous, fertile and flourishing part of the province is that comprised in the districts of Herat, Ghoryan, Obyh and Karukh. However the Kohsan, Rubati Sangi and Gulran are the remotest areas. In general, similar forest tree species are growing in Agriculture cultivated plains. The only difference one can see is the population of trees. In some districts such as Anjil and Gozara and city recreational spots, various species of trees are densely populated. Whereas in other places small number of trees have been sparsely grown. The main reason for such condition was told to be the cutting back of tees during war. There is a strong hope among the farmers that they will vary soon take up trees plantation activities in suitable areas of their farms. The inventory survey of tree species standing in cultivated land has been conducted district wise. Following is the compiled list, which indicates the tree species growing in Heart porvince

<b>Botanical Name</b>	<b>English Name</b>	<b>Local Name</b>	<b>Uses</b>
<b>1. Fruit Trees</b>			
Ficus carica	Fig	انجیر	Fruit, Fodder & Fuel
Prunus armeniaca	Apricot	زردالو	Fruit, Fodder & Fuel
Prunus communis	Plum	الوجه	Fruit, Fodder & Fuel
Prunus persica	Peach	شفتالو	Fruit, Fodder & Fuel
Pyrus communis	Pear	ناک	Fruit, Fodder & Fuel
Pyrus malus	Apple	سیب	Fruit, Fodder & Fuel
Amygdalus buharica	Almond	بادام	Fruit, Fodder & Fuel
Vitis vinifera	Grape	انگور	Fruit, Fodder & Fuel
Juglans regia	Walnut	چارمغز	Fruit, Fodder, Fuel & Timber
Punica granatum	Pomegranat	انار	Fruit, Fodder & Fuel
Zizyphus vulgaris		عناب	Fruit, Fodder & Fuel
Pistacia vera	Pistachio	پسته	Fruit, Fodder & Fuel

<i>Cydonia vulgaris</i>	quince	بهی	Fruit & Fuel
<b>2. Forest Trees</b>			
<i>Morus alba</i>	Mulberry	نوت	Fruit, Fodder, Fuel, Timber & Shade
<i>Salix wallichiana</i>	Willow	بید	Fodder & Fuel
<i>Salix babylonica</i>	Weeping willow	مجنون بید	Fodder & Fuel
<i>Populus alba</i>	White poplar	سفیدار	Fodder, Fuel & Timber
<i>Populus ciliata</i>	Poplar	نیله	Fodder, Fuel & Timber
<i>Populus euphratica</i>	Poplar	پدہ	Fodder & Fuel
<i>Populus nigra</i>	Black poplar	عرعر	Fodder, Fuel & Timber
<i>Platanus orientalis</i>		بنجه چنار	Fodder, Fuel, Timber & Shade
<i>Fraxinus floribunda</i>	Ash	شنگ	Fodder & Fuel
<i>Ailanthus glandulosa</i>	Heaven tree	بید روسي	Fuel & Soil conservation
<i>Robinia pseudoacacia</i>	Black Locust	اکاسی گلدار	Fodder, Fuel & Soil conservation
<i>Pinus halepensis</i>	Pine	ناجو	Ornamental, Timber & Fuel
<i>Elaeagnus latifolia</i>	Russian olive	سنجد	Fodder & Fuel
<i>Ulmus wallichiana</i>		پشه خانه ازاد	Fuel & Fodder
<i>Ulmus compestris</i>		پشه خانه خمره ائی	Fuel & Fodder
<i>Tamarix glica</i>	Tamarisk	کوره گز	Timber, Fuel & Fodder
<i>Catalpa spp.</i>		برگ دم	Fodder, Fuel & Timber
<i>Gleditschia triacanthos</i>		اکاسی خاردار	Fodder, Fuel and Timber
<i>Albizzia procera</i>		خار خستک	Fodder, Fuel & Timber
<b>3. Ornmental Bushes &amp; Trees</b>			
<i>Cercis griffithii</i>	Red bud	ارعوان	Fodder & Beautification
<i>Thuja orientalis</i>		مورپان	Hadge
<i>Rosa muscata</i>		نسترن	Beautification
<i>Hibiscus syriacus</i>		گلتوت	Beautification
<i>Lagestrum spp.</i>		بید ایراني	Hadge, Fodder & Fuel
<i>Cupressus torulosa</i>	Cypress	سررو	Beautification & Timber
<i>Nerium oleander</i>		گنبری	Beautification & Hadge
<i>Vitex negundo</i>		مروندی	Soil conservation & Hadge
<i>Haloxylon persicum</i>	Saxaoul	سکساول	Soil conservation & Beautification

Jusminum revolutum	Jusmin	پاسمند	Beautification & Hadge
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### Fruit bearing trees species

In Herat province Anjil and Gozara farmers are used to the collection and preservation of leaves for animal nutrition for the winter season. Whereas in this Province, the animals are normally allowed to graze on leaves which fall during late autumn from deciduous trees on the ground. They also shed the leaves by beating the branches with wooden sticks or shave the mulberry trees to collect leaves and fed them to the animals in fresh form during autumn. Shaved and collected Leaves are fed only to small animals.

### Forest tree species

Amongst the above-mentioned forest trees, animals do not normally feed Ailanthus and Pinus halepensis. Others are all fodder trees and largely used by animals during autumn season in fresh form.

**Ornamental Bushes:** They are planted for their beautification value.

### 7.2. Desert plains

Desert plains are the most important grazing areas of the nomads. They are usually situated around each district of the province. These plains are traditionally used for grazing of animals. These plains are dominated with very open vegetation of the following permanent bushes.

<b>Botanical Name</b>	<b>English</b>	<b>Local</b>	<b>Uses</b>
<b>1. Forest Trees</b>			
Tamarix glica	Temarisk	کوره گز	Fuel, Fodder & Timber
<b>2. Natural Bushes</b>			
Acantholimon		تلرون	Fodder, Fuel & Soil fixation
Salsola subaphylla		چرگس	Fodder, Fuel & Soil fixation
Artemisia herba alba		ترخ	Fodder, Fuel & Soil fixation
Alhagi camelorum		شتر خار	Fodder, Fuel & Soil fixation
Acanthophyllum spp.		کلاه بته	Fodder, Fuel & Soil fixation
Peganum harmala		سفند	Fodder, Fuel & Soil fixation
Convolvulus spinosa		گوره	Fodder, Fuel & Soil fixation
Bromus spp.	Broom grass	کرتہ	Fodder, Fuel & Soil fixation
Glycerhizia glabra	Glycer	شیرین بوبیہ	Fodder, Fuel & Soil fixation
Vitex negondi		مروندی	Fodder, Fuel & Soil fixation
Hippophea spp.	Buck thorn	بته خار	Fodder, Fuel & Soil fixation
Arteplix spp.	salty bush	گرنگی	Fodder, Fuel & Soil conservation
Periploca calophyla		اومه یا برره	Fodder, Fuel & Soil conservation
Suedea spp.		یاکمنی	Fodder, Fuel & Soil conservation
Caparis spinosa		کج خار	Fodder, Fuel & Soil conservation
Romix spp.		تروکی	Fodder, Fuel & Soil conservation

The above-mentioned plants are almost all thorny bushes, but very good fodder and grazed by small as well as large animals throughout the year. The composition is variable and depends upon the humidity, length of winter, sand composition, wind force, and grazing pressure. More humid places are denser vegetated with a species of richer composition. Large areas of these plains are converted in to agricultural land in Rubati Sangi, Zendajan, Ghoryan, Pashtoon Zarghon and Gulran districts. As explained by Ghulam Nabi the Vet. Clinic Officer of Kushki Rubati Sangi district " The conversion of range land in to agricultural land used to be common in the past also, but it is extremely faster and more acute in this district now. In the past years bullocks were used to plough and convert the rangeland. Whereas this year 250 tractors were purchased and operating this work." This unfortunate efforts will have a direct influence upon the animal nutrition's resources and will consequently minimiz the animals population or will rather end the animal husbandry at all.

### 7.3. Upper mountain ranges

North of the fertil tract of Ghoryan, Obyh and Karukh is the Band-i- Baba known to Europeans as the Paropamisus. This mountain range is really a prolongation of the middle branch of the Koh-i-Baba. The elevation of some peaks of this range is apprximately 4 to 5 thousand feet. The most important tree vegetation of this range has been included in the following table.

<b>Botanical Name</b>	<b>English Name</b>	<b>Local Name</b>	<b>Uses</b>
<b>1. Natural Fruit Trees</b>			
Pistacia vera	Pistachio	پسته	Fruit, Fodder, Fuel & Char-coal
Pistacia Khinjuk	Khinjuk	خنجک	Fruit, Fodder & Fuel
P. atlantica		کسور	Fruit, Fodder & Fuel
<b>2. Forest Trees &amp; bushes</b>			
Juniperus excelsa	Juniper	ارچہ	Timber, Fuel, Char-coal & Soil conservation
Cotoneaster bacillaris		شیرخشت	Fodder, Fuel & Soil conservation
Berberis aristata	Berbery	زرک	Fodder, Fuel & Soil conservation
Rubus spp.		کرورہ	Fodder, Fuel & Soil conservation
Corylus colerna		بادام پارون	Fodder, Fuel, Fruit & Soil conservation
Ficus nigra	Fig	انجیر	Fodder, Fuel & Fruit
Rhum alpinum		رواش	Fodder & Vegetable
Glycerhizia glubra	Glycer	شیرین بوبیہ	Fodder, Fuel & Medicine

Because of heavy and drastic cut these natural forests are in deplorable condition.

**NOTE:** The vegetation of Ghor and Bamyan provinces have close similarity with Heart province

## Recommendations

The following fodder tree species are widely distributed and adoptable to the locality conditions (climate, soil, topography) of all the Farah Districts.

- ***Robinia pseudoacacia***
- ***Salix wallichiana***
- ***populus celiata***
- ***Morus spp.***
- ***Elaeagnus latifolia***
- ***Fraxinua floribunda***

## **8. NORTHERN PROVINCES (BADAHSAN, TAKHAR, KUNDOZ AND BAGHLAN, SAMANGAN, SAR I PUL, BULKHG, JAWZJAN, FARYAB AND BADGHIS)**

### **8.1. Plain and Hilly Cultivated Land**

It is irrigated agricultural land intensively cultivated with field crops such as wheat, maize, barley, cotton, paddy, alfalfa clover, brassica, poppy, orchards, vegetables etc. It is in this category of land where farmers traditionally cultivate forest tree species along the irrigation canals, and marginal lands not suitable for agricultural crops. The fruit bearing trees are also planted by farmer but in fertile soil and suitable sites. Farmers throughout of these provinces without exception practice the traditional manner of cultivation. Types of trees and bushes planted are:

<b>Botanical Name</b>	<b>English Name</b>	<b>Botanical Name</b>	<b>Uses</b>
<b>1. Fruit Trees</b>			
Prunus armeniaca	Apricot	زردالو	Fruit, Fodder & Fuel
Prunus persica	Peach	شققاو	Fruit, Fodder & Fuel
Prunus cerasus	Cherry	گیلاس	Fruit, Fodder & Fuel
Prunus communis	Plum	لوچه	Fruit, Fodder & Fuel
Pyrus communis	Pear	نک	Fruit, Fodder & Fuel
Pyrus malus	Apple	سیب	Fruit, Fodder & Fuel
Amygdalus buharica	Almond	بادام	Fruit, Fodder & Fuel
Punica granatum	Pomegranate	انار	Fruit, Fodder & Fuel
Vitis vinifera	Grape	انگور	Fruit, Fodder & Fuel
Cydonia vulgaris	Quince	بھی	Fruit, Fodder & Fuel
Juglans regia	Walnut	چارمغز	Fruit, Fodder, Fuel & Timber
<b>2. Forest Trees</b>			
Morus alba	Mulberry	قوت سفید	Fruit, Fodder, Fuel, Timber &

			Shade
Morus indica	Black Mulberry	توت سیاه	Fruit, Fodder, Fuel, Timber & Shade
Morus serrata	Mulberry	توت	Fruit, Fodder, Fuel, Firmer & Shade
Salix wallichiana	Willow	بید	Fodder & Fuel
Salix babylonica	Weeping willow	مجنون بید	Fodder & Fuel
Populus alba	White poplar	سفیدار	Fodder, Fuel & Timber
Populus nigra	Black poplar	غر غر	Fodder, Fuel & Timber
Betula utili	Blue	بلو	Fodder, fuel, timber
Platanus orientalis	Plane tree	پنجه چنار	Fodder, Fuel, Timber & Shade
Fraxinus floribunda	Ash	شنگ	Fodder & Fuel
Ailanthus glandulosa	Heaven tree	بید روسي	Fuel & Soil Conservation
Robinia pseudoacacia	Black Locust	اکاسی گلدار	Fodder, Fuel & Soil Conservation
Cupressus torulosa	Himalyan cypress	سر و	Ornamental & Fuel
Pinus helapensis	Pine	ناجو	Ornamental, Timber & Fuel
Tamarix articulata	Tamarisk	گز	Fuel & Timber
Melia azedarach	Persian lilac	بکیان	Fodder, Timber, Fuel & Shade
Elaeagnus latifolia	Russian olive	سنجد	Fodder & Fuel
<b>3. Ornamental Exotic:</b>			
Acer oblongum	Maple	گلبرگ	Fodder, Ornamental
Gleditschia triacanthos		اکاسی خاردار	Fodder & Fuel
Catalpa .spp.		کتلپا	Fodder & Fuel
Ulmus compestris		پشه خانه عمره ائي	Fuel & Beautification
Ulmus wallichiana		پشه خانه ازاد يا چیناي	Fuel & Beautification
<b>4. Ornmental Bushes</b>			
Cercis griffithii	Red bud	ارغوان	Fodder & Beautification
Syringa emodi		پاسمن	Beautification
Thuja orientalis		مور پان	Hadge
Rosa muscata		بسترن	Beautification
Hibiscus syriacus		گل توت	Beautification

## 8.2. Fruit bearing trees species

The above-mentioned fruiting trees are planted almost all province. The main objectives of planting such trees are:

- To produce fruit, firstly for domestic use and/ or surplus for the supply to local market for earning money.
- To provide fuel, from pruning of dead, dying and diseased branches and cutting of unproductive trees.
- To produce timber, as the timber of most of such trees possess construction and industrial value as well. The wood is also used in local agricultural implements.
- In addition to all above-mentioned benefits bestowed on farmers, these trees play substantially valuable part in providing supplementary diet for animals.

The leaves of all such trees are either shaved or shed during the late autumn and fed to small animals except for fig trees. It is a common and traditional practice of villagers that they sweep and collect the leaves of deciduous trees, which normally shed during the early winter. The leaves are then stored in a dry and clean rooms and fed to small animals such as sheep and goats during the winter season. It is to be mentioned that cattle are not fed with such diet because the amount is not sufficient. The loquat however is also a good fodder tree but our farmers avoid shaving and collecting its leaves.

### Forest tree species

As mentioned earlier the farmers usually plant forest trees. The plantation manner is not as large-scale group plantations within the farm. The vary peculiar manner is the planting of trees in single row along the irrigation canals. Farmers all around the provinces practice this manner. The main objectives of planting such trees are to:

- Provide fuel wood for their domestic use and surplus to the local market.
- Provide timber for their domestic construction and agriculture implements. The surplus stock is usually supplied to local markets.
- Provide supplementary diet for their small animal during the winter season to overcome the animal diet shortage.
- Strengthened the canal banks against water erosion.

## 8.3. Ornamental exotics

A careful survey of recreational gardens, parks and roadside including city and suburbs was conducted. In addition to the trees mentioned above the ornamental exotic are also identified therein.

## 8.4. Natural Bushes

Botanical Name	English Name	Local Name	Uses
Peganum harmala		اسفند	Soil Conservation Local Medicine &

			Fuel
<i>Periploca calophylla</i>		برره	Fuel, Goats Fodder & Soil Conser
<i>Ephdra antermidia</i>		بندک	Fuel, Goats Fodder & Soil Conser
<i>Capparis spinosa</i>		شتر خار	Fodder, Fuel & Soil Conser.
<i>Saccharum munja</i>	Broom grass	جارو کابل	Cattle Fodder, Fuel & Soil Conser
<i>Glycrrhezia glabra</i>	Liquorice	شرین بویه	Soil conservation and medicinal uses
<i>Ferola asafoetida</i>	Devil's dung	هنگ	Soil conservation and medicinal uses
<i>Seidlitzia rasmarinus</i>		زمی	Fuel & Soil Conservation
<i>Alhagi camelorum</i>	Camel bush	شتر خار	Camel Fodder, Fuel Soil Conser
<i>Vitex negundo</i>		مروندی	Fuel, Goats Fodder & Soil Conser
<i>Cuminum carvi</i>		زیرہ سیا	Medicinal uses
<i>Crocus stivus</i>	Saffron	زعفران	Medicinal uses
<i>Reum alpinum</i>	Robarb	رواش	Vegetable and medicinal uses
<i>Capparis himalayensis</i>		کور	

### 8.5. Mountain slopes and upper valleys

Botanical Name	English Name	Local Name	Uses
<b>1. Fruit Trees</b>			
<i>Prunus armeniaca</i>	Apricot	زر دالو	Fruit, Fodder & Fuel
<i>Pyrus malus</i>	Apple	سیب	Fruit, Fodder & Fuel
<i>Morus alba</i>	Mulberry	توت	Fruit, Fodder, Fuel, Timber & Shade
<i>Punica granatum</i>	Pomegranate	انار	Fruit, Fodder & Fuel
<i>Vitis vinifera</i>	Grape	انگور	Fruit, Fodder & Fuel
<i>Juglans regia</i>	Walnut	چار مغز	Fruit, Fodder, Fuel & Timber
<i>Elaeagnus latifolia</i>	Russian olive	سنجد	Fodder & Fuel
<i>Pistacia vera</i>	Pistachio	پسته	Fodder, Dry fruit, fuel
<i>Amygdalus ebrahmica</i>	Almond	بادام	
<b>2. Forest Trees</b>			
<i>Pistacia khinjuk</i>	Wild Pistachio	خنچک	Fodder, Fuel & Erosion Control
<i>Salix wallichiana</i>	Willow	بید	Fodder & Fuel
<i>Populus alba</i>	White poplar	سفیدار	Fodder, Fuel & Timber

<b>Alnus nitida</b>	<b>Alder</b>	وتنوک	<b>Fodder &amp; Fuel</b>
<b>Fraxinus floribunda</b>	<b>Ash</b>	شنگ	<b>Fodder &amp; Fuel</b>
<b>Ailanthus glandulosa</b>	<b>Heaven tree</b>	بید روسي	<b>Fuel &amp; Soil Conservation</b>
<b>Robinia pseudoacacia</b>	<b>Black Locust</b>	اکاسی گلدار	Fodder, Fuel & Soil Conservation
<b>Amygdalus communis</b>	<b>Wild almond</b>	بادام کوهی	Soil conservation, fuel
<b>Juniperus excelsa</b>	<b>Juniper</b>	ارچہ	Soil conservation, fuel and timber

### Recommendations

The most common and valued tree species amongst all are:

- **Robinia pseudoacacia**
- **Morus spp.**
- **Salix spp.**
- **Populus spp.**
- **Elaeagnus latifolia**
- **Fraxinus floribunda**
- **Pistachio**
- **Juniper**

The wide adaptability and distribution of the above mentioned species, requirement of farmers, and the existing of high potential, they should be multiplied and extended in all over the districts.

I would like to close my report with love for trees, which inherent in men for their lyrical appeal and for the numerous benefits bestow on them. A statement has been well narrated that, if we are to survive, our philosophy of life must be written not merely in words or ideas, but in terms which would replant us firmly into the earth and under the shady tree, for:

**TREES MEAN WATER, WATER MEANS BREAD AND BREAD MEANS LIFE.**

### Joyce Kilmer Poem For Tree

*I thank that I shall never see*

*A poem lovely as a tree*

*A tree whose hungry mouth is prest    Against the sweet earth's hungry breast;*

*A tree that looks at God all day        And lifts her leafy arms to pray;*

*A tree that may in summer wear Anest of robins in her hair;*

*Upon whose bosom snow has lain;    Who intimately lives with rain?*

*Poems are made by fools like me,        But only God can make a tree!*