

# Ethnobotany of Some Useful Trees of Hindu-Kush Mountain Region: A Case Study of Swat Kohistan, District Swat, Pakistan

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## Abstract

An ethnobotanical study was carried in order to document the folk uses of tree species in the remote region of Swat Kohistan. The population of the region primarily depends upon plant resources for their domestic needs. It was found that 28 tree species belonging to 15 different families are utilized for multiple purposes in Swat Kohistan. *Cedrus deodara* and *Pinus wallichiana* is also exported to other parts of Pakistan and thus play a vital role in the economy of the area. Most of these tree species are also used for medicinal purposes.

## Introduction

Kohistan, the place of mountains was called “Yaghistan”, the land of rebels, during the British rule. It is the name although given to all the hilly areas, as Swat Kohistan, Dir Kohistan and Indus Kohistan. Literally the word; “Kohistan” means the place of mountains. The Kohistan under focus is generally called as Swat Kohistan.

Swat Kohistan comprises Tehsil Kalam. It borders the Northern Areas of Gilgit and Chitral in the North, District Swat in the South. Indus Kohistan in the east and upper parts of District Dir and some parts of Chitral in the West. The population of Swat Kohistan is 31029 and the area is about 206523 hectares (District Census Report, 1998). The minimum elevation of Swat Kohistan is 2000 m at Kalam. Kalam is the major town and center of Swat Kohistan.

Nature has been very generous to the region in its endowments of towering invincible peaks, gigantic glaciers and majestic streams, not to mention the splendor of its valleys, the meadows and high altitude plateaus.

The Kohistanis enjoyed large degree of political independence for many centuries. After independence of India from British rule, the area came under the rule of Wali (former ruler of Swat) in 1947. At that time Swat was an autonomous state. The Wali (commonly called Baachaa Sahib of Swat) built roads, schools and hospitals in the area. During the reign of Wali Sahib, the area witnessed great development like other parts of Swat. The Kohistan area was finally incorporated with Pakistan in 1969.

The people of Swat Kohistan are poor and the area is highly underdeveloped. Local people are primarily farmers or tenants. They also rear livestock. Some thirty years back, potato was introduced as cash crop in the area. Its cultivation was soon started in the area on commercial basis. Potato produced in the area during summer season provides backbone of local economy as it is exported to different parts of the country. Now a

days two crops of potato are taken annually. Beside potatoes, turnip and cabbage are the other notable cash crops of the area. Maize crop, beans and peas are also cultivated in the area.

Fruits are also exported from the area. These include apples and walnuts. Some people collect medicinal plants and morels and sell it in local markets, thus earning their live hood. The people also get their share in forest revenues from the government.

During winter (December, January and February) season all activities stops due to heavy snow fall and the area comes under a thick blanket of snow. Locals travel to Mingora, Peshawar, Rawalpindi, Lahore and Karachi to earn their livings.

In late 80's there has been an explosive growth of tourism in Kalam. There are more than 150 hotels in Kalam presently. Tourism greatly improved the socioeconomic conditions of the area by providing job opportunities to local people. Local people work in hotels and restaurants, work as guides and jeep drivers, while some has opened shops in Kalam. In Kalam, outsiders own most of the hotels and as a result most of the profit from tourism leaves the area.

## **Status of Ethnobotany in Pakistan**

Pakistan is bestowed with a unique biodiversity, comprising of different climatic zones and a wide range of plant species. Pakistan has four phytogeographical regions, consisting of Irano-Turanian (46%), Sino-Himalayan (10%), Saharo-Sindian (9.5%), and Indian element (4.5%). The country has about 6,000 species of wild plants of which about 400 to 600 are considered to be medicinally important (Hamayun *et al.*, 2003).

In Pakistan, ethnobotany is introduced recently. The subject of ethnobotany was included in the curricula of some Universities and few students of M.Phil and PhD were financially assisted under the auspices of ethnobotany project, WWF-Pakistan. Some projects have been also launched for documentation as well as sustainable use of plant resources. However, the present efforts are not adequate and more concrete efforts are required on the part of Government and non-governmental organizations. The northern areas of Pakistan comprising Himalayas, Karakorums and Hindu-kush are under tremendous pressure from local population because of illicit cutting of valuable plants, poor collection and storage methods of medicinal plants, smuggling of timber wood, over grazing, corrupt forest officials, illiterate population with no sense or lust for conservation and above all passive and non practical policies of government as well as NGO's working in the area (Hamayun *et al.*, 2003).

## **Methods and Material**

Present study was carried out from April 2001 to April 2004. During field work, interviews were conducted with the local inhabitants, selected informants, the herbalists 'hakims' (local physicians of eastern system of medicine), pansaries (medicinal plants sellers in the local markets). Questionnaires were adopted during the surveys in order to get qualitative and participatory approach about the plant resources and their utilization by the local people. Questions concerning the utility of different plants, quantity of plants used, rate

of consumption, availability, economics/market value and fuel wood /fodder head loads had been asked.

## Results

Present study shows that 28 tree species belonging to 15 families are used in Swat Kohistan for different local needs. A brief description is given.

### Family Anacardiaceae

Botanical Name: *Pistacia integerrima* J. L. Stewart ex Brand.

Local Name: Shnai

Part Used: Wood, leaves, fruits

Local Uses: The fruit and galls extract is used for curing jaundice. Wood is used as timber and for making furniture. Leaves are used as fodder for cattle.

### Family Betulaceae

Botanical Name: *Alnus nitida* (Spach.) Endl.

Local Name: Geiray

Common Names: Alder & Sharol (Eng.)

Part Used: Wood, catkins

Local Uses: Wood is used as fuel, also used for making agriculture appliances. It is very useful to prevent soil erosion. Catkins are used in cosmetics.

Botanical Name: *Betula utilis* D. Don

Local Name: Birch

Common Names: Bhoj Pattar (U); Birch (Eng.)

Part Used: Shoot

Local Uses: Wood is used for making agricultural tools, utensils, fences and as fuel wood.

### Family Caprifoliaceae

Botanical Name: *Viburnum cotinifolium* D. Don (Fig. 4.22)

Local Name: Kasarbotay

Part Used: Fruits, Leaves, branches

Local Uses: The fruits are edible while branches serve as fuel wood. Also used for the removal of placenta after pregnancy in cattle.

### Family Ebenaceae

Botanical Name: *Diospyros lotus* L. (Fig. 4.24)

Local Name: Toor amlook.

Part Used: Fruit, wood and leaves

Local Uses: Fruit are used as purgative and laxative agent. The wood is used as fuel. The leaves serve as fodder.

### **Family Fagaceae**

Botanical Name: *Quercus dilatata* Royle

Local Name: Tor Banj

Common Names: Barungi (U); Moru (Eng.)

Part Used: Wood and nuts

Local Uses: Fuel wood species. Seeds are edible, astringent and diuretic, used in diarrhea, indigestion and asthma. Due to its toughness, the wood is used in agricultural tools, handles of plough, axes, gun butts, and walking sticks. Children use seed cups as playing tops.

Botanical Name: *Quercus baloot* Griff.

Synonym: *Q. ilex* L.

Local Name: Tor Banj

Common Names: Breh (U)

Part Used: Wood

Local Uses: The bark is use in asthma. Timber, fuel wood, Wood is also used for making agricultural tools specially ploughs and handles.

Botanical Name: *Quercus incana* Roxb.

Local Name: Spin Banj

Common Names: Ban and Ringi (U); Silver White Oak (Eng.)

Part Used: Wood

Local Uses: The bark is use in asthma. Timber, fuel wood, used for making agricultural tools specially ploughs and handles.

Botanical Name: *Quercus semecarpifolia* Sm.

Local Name: Meer

Part Used: Fruit

Local Uses: The ripened fruits are crushed to powder and mixed with wheat flour, then fried in Desi Ghee. It is locally called Halwa and is a general body tonic.

### **Family Hippocastanaceae**

Botanical Name: *Aesculus indica* (Wall ex Camb.) Hk.f. (Fig. 4.31)

Local Name: Jawaz

Common Names: Horse Chestnut (Eng.)

Part Used: Fruits, leaves, wood

Local Uses: Leaves are used as fodder. Nuts are colic, used for the cure of chest diseases in horses, donkeys and mules. Wood is used in making furniture, agricultural appliances and gun butts. Also used for burning purposes.

### **Family Juglandaceae**

Botanical Name: *Juglans regia* L.

Local Name: Ghuz

Common Names: Akhrot (U); Walnut (Eng.)

Part Used: Nuts, bark, leaves, and wood

Local Uses: It is used in standard furniture, also used for carving. Nuts can infect throat due to its oily nature. It has warm nature and can cause jaundice. It is also used as a dye. Used in naming i.e., Ghuz. Decoction of leaves is given in eczema and intestinal worms. Nuts are sold in local markets from where they are exported to big markets throughout Pakistan. Bark (Dandasa) is used for cleaning and sparkling teeth. Leaves are also used as lips make-up, particularly by women, as it imparts a pinkish color to the lips. Removal of the bark, however, injures the trees. In extreme cases, it even kills them. Moreover, it is suspected that the bark is used in preparing fake tea, which is harmful to the health. For this reason, extraction of walnut bark has been banned by the government. It is still extracted by forest dwellers, however, for domestic use and for sale to visitors. Prior to the ban, the bark was exported to the Middle East.

### **Family Juniperaceae**

Botanical Name: *Juniperus communis* L.

Local name: Ghoghar

Part used: Whole plant

Local Uses: The plant is added to mustard oil and kept over night. The plant is then removed and applied on the body for curing itching.

### **Family Meliaceae**

Botanical Name: *Cedrela serrata* Royle

Local Name: Meem

Part Used: Bark, leaves

Local Uses: Wood and root bark of this plant is used for roundworms. The decoction of leaves is used for hair washing. The juice is administered in diabetes. Also used as cooling agent.

### **Family Moraceae**

Botanical Name: *Ficus carica* L.

Local Name: Inzar

Common Names: Injeer (U); Fig (Eng.)

Part Used: Fruits, latex, leaves, wood

Local Uses: Laxative, fuel wood and demulcent. Milk of leaves is a remedy for the nail wound. Used in constipation, piles and urinary bladder problems. Latex is used to make the removal of spines and thorns easy. It is considered as holly tree. Superstitious stories are related, if one saw its flower, he will become rich. Inzargul (Flower of fig) is used for a person who meets after a long time. It is also a name of a person. Fruits, both in dry or fresh form, are edible. Leaves serve as fodder.

Botanical Name: *Morus alba* L.

Local Name: Spin Toot

Common Names: Sufaid Toot (U); Mulberry (Eng.)

Part Used: Fruits, leaves, branches, trunk

Local Uses: Fruits are eaten both fresh and dry. They are laxative, purgative. Leaves are emollient, used for cleaning throat, cooling agent, anthelmintic and astringent. Baskets are also made from the flexible branches. Wood is used in furniture. Leaves were once used in rearing silkworms. Leaves are eaten by goats and sheep. It also provides shade.

Botanical Name: *Morus nigra* L.

Local Name: Tor Toot

Common Names: Kala Toot (U); Balck Mulberry (Eng.)

Part Used: Leaves, fruits, branches, wood

Local Uses: Fruits are eaten however they are laxative; leaves are emollient, used for cleaning throat, cooling agent, anthelmintic and astringent. Baskets are made of flexible branches. Wood is used in making furniture. Shade tree, fuel wood, leaves are fodder for sheep and goats.

## **Family Oleaceae**

Botanical Name: *Olea ferruginea* Royle (Fig. 4.34)

Synonym: *O. cuspidata* Wall. ex G. Don

Local Name: Khona

Common Names: Zaitoon & Kahu (U); Olive (Eng.)

Part Used: Fruits, leaves and trunk

Local Uses: Fruit is eaten, ant diabetic, leaves are used in toothache, astringent, antiseptic, diuretic, anti periodic, used in soar throat. Oil is obtained from seeds. It is a holy tree, grown in shrines and graveyards. Used for making agricultural tools, fuel wood. Used in naming of a person i.e., "Khona Gul" means flower of olive.

## **Family Pinaceae**

Botanical Name: *Abies pindrow* Royle

Local Name: Chokar/ Char

Common Names: Zarnab (U); West Himalayan Silver Fir (Eng.)

Part Used: Bark, leaves, trunk, cones

Local Uses: The leaves are used as substitute for tea. The plant provides useful timber for building purposes. Wood is used in furniture, bridges, matches industry and beams. Branches are used for burning purposes; leaves are used for placing fruits in crates. Cones are used as fuel and decoration.

Botanical Name: *Cedrus deodara* (Roxb. ex Lamb.) G. Don

Local Name: Loo/Diyar

Common Names: Deodar (U); Cedar (Eng.)

Part Used: Wood and Resin

Local Uses: Locals use plant resin for the treatment of urticaria and other skin diseases. The wood is used as timber, for making bridges and construction purposes. It is the most valuable plant of the area. Also used for fuel wood purposes in the area. The plant is also exported to other parts of the country.

Botanical Name: *Picea smithiana* (Wall.) Boiss.

Local Name: Rawn

Common Names: Kachal (U); W. Himalayan Spruce (Eng.)

Part Used: Whole tree.

Local Uses: Timber wood used in bridges, building houses, fuel wood. Leaves are used to keep fruits in crates.

Botanical Name: *Pinus wallichiana* A. B. Jackson

Local Name: Peeuch

Common Names: Biar and Kail (U); Blue Pine (Eng.)

Part Used: Whole tree

Local Uses: Valuable timber wood, used for house building, making furniture, used in match industry, making bridges and beams. Cones are used as ornamental. The plant is also exported to other parts of the country.

## **Family Punicaceae**

Botanical Name: *Punica granatum* L.

Local Name: Ananghorai

Common Names: Jungli Anar and Darune (U); Pomegranate (Eng.)

Part Used: Fruit, bark, leaves

Local Uses: Leaves are used in skin diseases, dysentery. Fruit is astringent, cooling, blood purifier. Fruit pericarp is used for whooping cough. It is laxative. Seeds are dried and known as "anardana" which are condiments and used as spices. Bark of stem and root is anthelmintic, mouthwisher, antipyretic and expectorant. The fruit pericarp is also used for coloring purposes. Used in naming i.e., Anar Gul (Flower of pomegranate).

## **Family Rosaceae**

Botanical Name: *Malus pumila* Mill.

Local Name: Manra

Common Names: Seb (U); Apple (Eng.)

Part Used: Fruit, flowers, wood

Local Uses: Valuable commercial fruit, purgative, source of iron, expectorant, used in jams, jellies, marmalades and good for heart. Wood is hard and is used for agricultural tools, branches serves as fuel wood.

Botanical Name: *Prunus domestica* L.

Local Name: Alucha

Common Names: Alucha (U); Plum (Eng.)

Part Used: Fruit, wood, leaves

Local Uses: Commercial fruit is used in jams and jellies. It is laxative, flavoring agent. Fruit pulp is used in chutneys. Wood is used for burning. Leaves are used as fresh fodder. It is honeybee species.

Botanical Name: *Prunus armeniaca* L.

Local Name: Varieties: Khubani, Zardaloo and Asharay

Common Names: Khubani (U); Apricot (Eng.)

Part Used: Fruits, wood, leaves, seeds

Local Uses: Fruits and seeds are eaten both fresh and dry. It is laxative, gum is obtained, fuel wood and honeybee species. Leaves serve as fresh fodder.

Botanical Name: *Prunus persica* (L.) Batsch.

Local Name: Shaftalu

Common Names: Aru (U); Peach (Eng.)

Part Used: Fruit, leaves and wood

Local Uses: Fruits edible, fuel wood, leaves serve as fodder.

## **Family Salicaceae**

Botanical Name: *Populus alba* L.

Local Name: Sufaida, Sperdad

Common Names: Sufaida (U); Poplar (Eng.)

Part Used: Leaves, wood

Local Uses: Fuel wood, ornamental, shade tree, used for making shelters for tobacco drying. Leaves serve as fodder for goats and sheep.

Botanical Name: *Salix tetrasperma* Roxb.

Local Name: Wala

Common Names: Willow

Part Used: Whole tree

Local Uses: Fuel wood, planted along water courses to prevent soil erosion, mud supporter, used in making cricket bats and light furniture.

## Discussion

Many of today's drugs have been derived from plant sources. As modern medicine and drug research advanced, chemically synthesized drugs replaced plants as the source of most medicinal agents in industrialized countries. Although research in plant sources continued and plants were still used as the raw material for some drug development, the dominant interest (and resulting research funding) shifted to the laboratory. The 1990's have seen a growing shift in interest once more; plants are resurging as a significant source of new pharmaceuticals. Industries are now interested in exploring parts of the world where plant medicine remains the predominant form of dealing with illness. Himalayas, for example, has an extraordinary diversity of plant species and has been regarded as a treasure grove of medicinal plants. Swat Kohistan are gifted with immense plant resources and diverse flora. However, sustainable use of plant resources is required in the area, as ruthless use of these plant resources will result in the loss of valuable flora and fauna.

The primitive people of all ages had knowledge of medicinal plants, which they acquire as a result of trial and error. This knowledge is still alive and several hundred species are used in herbal remedies in indigenous system of medicines, where the whole plant or plant part or its extraction is used. The use of plants for the existence of human being is as old a practice as the human race itself. The accumulation of knowledge of plant use however coevolved with human civilization through the experimental use of plants, generation after generation. Medicinal plants are widely used in household remedies and by practitioners of traditional systems of medicines, particularly in the developing world where public health care services are limited. At the same time, interest in traditional and contemporary and alternative medicine in industrialized countries has grown rapidly. The people of Swat Kohistan, like most other indigenous people depend upon plant resources for their medicinal requirements and in this way a traditional system of folk recipes has evolved in the area over a period of time.

Fuel wood is one of the prime causes of forest destruction in Swat Kohistan because the winter season is long and very harsh. People need fuel for heating as well as cooking. The local people are unaware about the conservation of valuable and indigenous plants of the area. They took an axe, go to the nearest forests and cut trees. Sometime they cut whole tree for collecting only branches and twigs. Due to this indiscriminate cutting, not only the forest area is declining but also valuable indigenous species are in danger and if this trend continues, the ultimate result would be the extinction of these species from the area. For relieving pressure on fuel wood species, following recommendations are suggested.

- Natural gas should be introduced in the area as an alternate fuel source. If presently not feasible for Government, liquid petroleum gas (LPG) cylinders can serve the purpose. However, the prices should be kept in reach of locals.
- Introduction of fuel efficient stoves like that as in Ayubia National Park area will also help reducing pressure on forests for fuel wood requirements.
- The people of the area are ignorant about the importance of biodiversity and conservation status of the area.

They also show poor selection of fuel wood species. As a result valuable indigenous flora is used as fuel wood species. Awareness programs at grass root level should be introduced in the area to solve the problem.

The study area has a big barren area (97441 hectares). A-forestation projects should be launched on cultivable wastelands. These projects will not only help conserve the local flora but also improve the socio-economic conditions of the area.

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