

## **ETHNOBOTANICAL STUDIES ON PLANT RESOURCES OF RANYAL HILLS, DISTRICT SHANGLA, PAKISTAN**

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### **Abstract**

Ethnobotanical information were collected on 97 plant species from Ranyal Hills District Shangla, Pakistan. These plants were classified for their traditional medicinal and economic uses. Many of these plants have more than one local use. There were 37 fuel species, 37 forage/fodder species, 31 medicinal species, 18 edible species, 12 species used for making shelter, 10 vegetables species, 9 poisonous species, 7 ornamental species, 6 timber wood species, 4 furniture wood species, 4 species used for fencing, 4 honey bee plants, 3 species for agricultural tools, 2 species used as flavoring agents, 2 species for making mats and baskets, 2 species used with religious belief, 2 species for cleaning teeth, 1 species as tea substitute, 1 fiber yielding species, 1 species as adhesive, 1 irritant species and 1 species for making pens.

### **Introduction**

Ranyal Hills, District Shangla has average altitude from 850-2350 m, lies between 34°31' to 33°08' north latitudes and 72° 33' to 73°01' east longitudes. The climate of the area is mild in summer and cold in winter. The annual rainfall is approximately 1415.9 mm. (Anon., 2003).

The ethnobotanical information besides listing the traditional uses of plants, helps ecologists, pharmacologists, taxonomists, watershed and wild life managers in their efforts for improving the wealth of area. Ethnobotanical research addresses the characterizing traditional knowledge to establish priorities with the local community to ensure that the local values are translated into rational use of resources and effective conservation of biological diversity and cultural knowledge. Plants as bioresource are responsible for the socioeconomic uplift of the area and people. The people of the area are mainly poor depending upon agriculture, government services and forest resources. Therefore, the forest is under severe biotic pressure. A forest reserve should be a constant source of maintaining genetic diversity of plants and animal and these resources should be available to man through proper conservation.

Many such studies have been done on the ethnobotany of medicinal and other useful plants of neighboring countries (Gupta *et al.*, 1997; Singh *et al.*, 1997; Vedavathy & Mrudula, 1997; Siwakoti & Siwakoti, 1998; Khan, 1999; Mustafa *et al.*, 2000; Ghimireet *et al.*, 1999; Siddiqui *et al.*, 2000). In Pakistan, some ethnobotanical studies have also been carried out (Tariq *et al.*, 1995; Shinwari & Khan, 1997, 1998; Badshah *et al.*, 1996; Durrani *et al.*, 2003; Gilani *et al.*, 2003). The ethnobotany of some parts of Swat has also been reported (Hussain *et al.*, 1995; Hussain & Sher, 1998; Sher *et al.*, 2003, 2004; Hussain *et al.*, 2004, 2005). The present study reports the traditional utilization of plants of Ranyal Hills as no reference on the ethnobotany exists from this remote area.

## Materials and Methods

The study was conducted during July-August, 2000-2001 to document the traditional uses of plants of Ranyal Hills District Shangla, Pakistan. The plants, collected from different localities round the year were dried, preserved and identified with the help of Flora of Pakistan (Nasir & Ali, 1971-1995; Ali & Qaisar, 1995-2005). The ethnobotanical information was known from local elderly knowledgeable people and local drug dealers. The plants were classified into various ethnobotanical classes.

## Results and Discussion

Ethnobotanical information showed that 97 species were locally used for various purposes (Table 1). They included 37 fuel wood species, 37 fodder species, 31 medicinal species, 18 edible species, 12 shelter making species, 10 vegetable species, 7 ornamental species, 6 timber wood species, 4 furniture wood species, 4 fences and hedges species, 4 honey been species, 3 agricultural tools making species, 2 species for cleaning teeth, 2 flavoring agents, 1 coffee substitute species, 1 fiber yielding species, while 10 species were poisonous.

People living around Ranyal hills are mostly poor and lack basic facilities such as health care units, electricity, gas and coal. Therefore, they mainly depend upon forests for fuel wood. Some 37 plants including *Berberis lycium*, *Continus cogyra*, *Cotoneaster integerima*, *Dodonaea viscosa*, *Plectranthus rugosus*, *Quercus incana*, *Q. balloot*, *Spiraea lindleyana* and *Viburnum cotinifolium* were used as fuel wood. The findings agree with those of Badshah *et al.*, (1996), Hussain *et al.*, (2004, 2005) and Rashid *et al.*, (1997) in this respect. Fuel wood is the major source of household energy (Awan, 2000). Khan (2000) stated that 18% people have dependency on fuel wood even in Mingora, Swat, which has electricity and fuel gas facilities.

Thirteen species including *Heteropogon contortus*, *Eragrostis papposa*, *Cyprus spp.*, *Panicum spp.*, *Parapholis incurva* and *Setaria viridis* etc were the commonly used fodder plants. These findings agree with those of Hussain & Mustafa (1995), who reported 51 fodder species from Hunza. The present study is also in line with those of Hussain *et al.*, (2004,2005); Hussain & Sher (1998); Sher *et al.*, (2003, 2004), who reported almost same plants from other parts of Swat.

The local people use 31 medicinal species in health care system. The promising species included *Berberis lycium*, *Artemisia absinthium*, *A. dubia.*, *A. maritima*, *Achyranthus aspera*, *Ajuga bracteosa*, *Paeonia emodi*, *Bergenia ciliata*, *Viola canescens*, *Valeriana jatamansi*, *Salvia moorcroftiana*, *Hyparicum perforatum*, *Mentha longifolia* and *Xanthoxylum armatum*. The results agrees with the findings of Gupta *et al.*, (1995), Lewis & Elvin (1995), Dastagir (2001) and Hussain *et al.*, (2005), who reported plants that are traditionally used for curing many diseases. Same species are used in other parts of Swat for treating various ailments.

Edible fruits and seed are obtained from 18 species including *Berberis lycium*, *Diospyrus lotus*, *Juglans regia*, *Punica granatum*, *Fragaria vesica* and *Zizyphus sativa*. Similar reports have been made by Hussain *et al.*, (1996). Ten species including *Amaranthus viridis*, floral buds of *Bauhinia variegata*, *Chenopodium album*, *Medicago denticulata* and *Salvia lanata* were locally used as vegetables.

Table 1. Traditional local uses of plants of Ranyal Hills of District Shangla, Pakistan.

S.#	Species	Family	Local Name	Traditional local uses
1.	<i>Arisaema flavum</i> Schott.	Araceae	Mar judhai	Poisonous, kills animals, lice and rats etc.
2.	<i>A. jacquemontii</i> Blume	Araceae	Mar Judhai	Poisonous kills animals laces and rates etc.
3.	<i>Artemisia dubia</i> L.	Asteraceae	Tarkha	Anthelmintic, Febrifuge
4.	<i>A. maritima</i> L.	Asteraceae	Tarkha	Antiseptic, anti-inflammatory, cooling agent.
5.	<i>Acacia nilotica</i> (L.) Delile.	Mimosaceae	Kikar	Fuel wood.
6.	<i>Achyranthes aspera</i> L.	Amaranthaceae	Buthkunda	The juice form chopped roots is used as Antipyretic.
7.	<i>Adiantum capillus-veneris</i> L.	Pteridaceae	Sombul	Use for cleaning and sparkling of teeth
8.	<i>Aesculus indica</i> (Wall ex Camb) HKF	Hippocastanaceae	Jowz	Fuel wood, timber wood
9.	<i>Ajuga bracteosa</i> Wall ex.Benth	Lamiaceae	Booti	Blood purifier, cooling agent, used in curing itches
10.	<i>Amaranthus viridis</i> L.	Amaranthaceae	Chalairay	Pot herb and fodder.
11.	<i>Andrachne cordifolia</i> (Decne.) Mull.	Euphorbiaceae	Krachi	Poisonous to cattle, fuel wood
12.	<i>Aristida</i> spp.	Poaceae		Used as fresh fodder for cattle.
13.	<i>Bauhinia variegata</i> L. Wight.	Caesalpinaceae	Kuliarr	Floral bud used as vegetable
14.	<i>Berberis lycium</i> Royle	Berberidaceae	Kwarary	Cooling agent, fruits edible, wood used in fences and hedges, fuel wood, used in diarrhea, backache and gonorrhea.
15.	<i>Bergenia ciliata</i> (Haw.) Strenb.	Saxifragaceae	Gut pandha	Used for healing wounds, anti-inflammatory, ornamental.
16.	<i>Cannabis sativa</i> L.	Cannabaceae	Bhung	Sedative, narcotic, fibbers yielding and honey bee spp.
17.	<i>Celtis caucasica</i> Willd.	Ulmaceae	Tagha	Timber wood, fuel wood, fresh leaves fodder.
18.	<i>Cenchrus ciliaris</i> L.	Poaceae	Pisho lakai	Used as fresh and dry fodder for cattle.
19.	<i>Chenopodium album</i> L.	Chenopodiaceae	Sarmay	Pot herb
20.	<i>Clematis grata</i> Wall	Ranunculaceae	Chamiarai	Leaves used as fresh fodder, leaves when chopped and smelled causing nausea.
21.	<i>Cotinus coggyra</i> Scop	Anacardiaceae	Chamiarai	Fire wood, leaves fodder for goats, sheltering in mud houses.
22.	<i>Contoneaster nummularia</i> Fish & Mey.	Rosaceae	Mammanra & Khurawa	Fuel wood, leaves are fodder for goat, sheltering in mud houses, for making walking sticks.

Table 1. (Cont'd.)

S.#	Species	Family	Local Name	Traditional local uses
23.	<i>Cynodon dactylon</i> L.	Poaceae	Kabal	Fodder, grown in lawns and gardens as ornamental.
24.	<i>Dalbergia sissoo</i> Roxb	Papilionaceae	Shawa	Furniture wood, fuel wood.
25.	<i>Daphne mucronata</i> Royle	Thymelaeaceae	Lighonay	Poisonous, fuel wood.
26.	<i>Datura alba</i> Nees	Solanaceae	Spina	Poisonous to cattle
27.	<i>Debregeasia salicifolia</i> (D.Done) Rendle	Urticaceae	Ajlat	Fuel wood, fresh fodder for goat and cattle.
28.	<i>Dioscorea villosa</i> L.	Dioscoreaceae	Kuntris	Vermifuge for children.
29.	<i>Diospyros lotus</i> L.	Ebenaceae	Toor amlook	Fruits edible, fire wood.
30.	<i>Dodonaea viscosa</i> (L.) Jacq.	Sapindaceae	Ghwarraskay	Fuel wood, pollen causing nausea.
31.	<i>Duchesnia indica</i> (Andr) Fock.	Rosaceae	Zamaki Toot	Fresh fodder, fruits edible, laxative
32.	<i>Euphorbia helioscopia</i> L.	Euphorbiaceae	Zahar booti	Poisonous, wheat's weed.
33.	<i>Euphorbia hirta</i> L.	Euphorbiaceae	Chaghji boti	Latex used for ringworm and gonorrhea, weed.
34.	<i>Elaeagnus umbellata</i> Thumb	Elaeagnaceae	Ghanabranga	Fruits edible, fire wood
35.	<i>Eragrostis papposa</i> (Roem. & Schult.) Steud	Poaceae	Anzar	Whole plant fresh and dry fodder.
36.	<i>Ficus carica</i> L.	Moraceae		Fuel wood, fresh fodder, fruits edible, laxative, milky latex of leaves used as adhesive and help to extract spine.
37.	<i>Fragaria vesica</i> Lindl	Rosaceae	Shakar	Fresh fodder, fruits edible.
38.	<i>Fumaria indica</i> (Housskn) Pugsley.	Fumariaceae	Jeshay	Fresh fodder
40.	<i>Geranium wallichianum</i> D.Don ex.Sweet.	Geraniaceae	Sra judhai	Used as tonic for cattle, tonic, analgesic etc.
41.	<i>Heteropogon contortus</i> (L.) P.Beaur.ex. Roem.	Poaceae	Soormal wakha	Dry and fresh fodder.
42.	<i>Hypericum perforatum</i> L.	Hypericaceae	Shim chai	Used as substitute for coffee.
43.	<i>Indigofera heterantha</i> Wall ex. Brandi	Papilionaceae	Ghwareja	Fire wood, fodder for sheep, goat etc. also used in making shelter.
44.	<i>Ipomoea purpurea</i> (L.) Rath.	Convolvulaceae	Jrdhay	Used in bronchitis, ornamental.
45.	<i>Jasminum humile</i> L.	Oleaceae	Chambeli	Ornamental.
46.	<i>Juglans regia</i> L.	Juglandaceae	Ghuwaz	Fruits edible, wood used in furniture, bark used as tooth brush used for cleaning and sparkling of teeth, also used as lips makeup. The bark is called dandasa.

Table 1. (Cont'd.)

S.#	Species	Family	Local Name	Traditional local uses
47.	<i>Justicia adhatoda</i> L.	Acanthaceae	Baikarr	Used as fire wood, poisonous and honey bee plant.
48.	<i>Medicago minima</i> (L.) Grub	Papilionaceae	Spishitary	Used as potherb, fodder for cattle.
49.	<i>Melia azadirachta</i> L.	Meliaceae	Tora bikana	Timber wood, fuel wood, leaves used as fresh fodder.
50.	<i>Melothria heterophylla</i> Cogn.	Cucurbitaceae	Desi Kakora	Fruit edible, purgative, stimulant.
51.	<i>Mentha longifolia</i> (L.) Huds.	Lamiaceae	Vallanay/ Ilanay	Used as potherb, flavoring agent, also useful in cholera, carminative & digestive
52.	<i>Morus nigra</i> L.	Moraceae	Toor Tooth	Trunk used in furniture, branches as fuel wood, fresh fodder for silkworm and cattle, fruits edible.
53.	<i>Myrsine africana</i> L.	Myrsinaceae	Maro rang	Fuel wood, leaves as fodder.
54.	<i>Nerum indicum</i> Mill.	Apocynaceae	Ganderay	Ornamental. Honey bee spp., poisonous
55.	<i>Olea ferruginea</i> Royle	Oleaceae	Khona	Very hard wood used for making plough, axes, diggers, sickle and hoe handles. Furniture wood, fuel wood, leaves fresh fodder for cattle. Seeds edible used in toothache and anti-periodic. Holy tree used in names as e.g. Khona gul, Khona baba, also the major vegetation of graveyards.
56.	<i>Origanum vulgare</i> L.	Lamiaceae	Shamakay	Aromatic, analgesic, fresh fodder.
57.	<i>Oxalis corniculata</i> L.	Oxalidaceae	Da zamaki tarookay	Used as flavoring agent in potherbs, used in stomach problems also used as fresh fodder.
58.	<i>Panicum</i> Spp.	Poaceae	Koray wakha	Dry and fresh fodder.
59.	<i>Paeonia emodii</i> Wall ex. Royle.	Ranunculaceae	Mamekh	Used as tonic, analgesic, anti-periodic.
60.	<i>Parapholis incurva</i> (L.)	Poaceae		Dry and fresh fodder.
61.	<i>Parrotiopsis jacquemontiana</i> (Decne) Rheder.	Hamamelidaceae	Biranj	Firewood, sheltering in mud made houses, wood used for handles of plough, axes, digger, saw, sickle etc. Leaves used as fodder for cattle.

Table 1. (Cont'd.)

S.#	Species	Family	Local Name	Traditional local uses
62.	<i>Phragmites karka</i> (Retz.) Trin. ex. Steud.	Poaceae	Nul wakha	Fresh fodder, stem is used to make mats and writing pencils.
63.	<i>Pimpinella diversifolia</i> DC	Apiaceae	Chora	Honey bee Spp.
64.	<i>Pinus roxburgii</i> Sargent	Pinaceae	Nukhtar	Timber wood, furniture wood, fuel wood, cones and needles as fuel burning, source of turpentine and resins. Leaves used sheltering and for fruits packing in crates, seeds edible. The wood is durable costly, cleansable and beautiful than <i>P.roxburgii</i> . Other uses similar to of <i>P.roxburgii</i> .
65.	<i>P. wallichiana</i> Jackson	Pinaceae	Peuch	Fuel wood, used in sheltering of mud made houses, used as anti-septic anti-inflammatory, also used in jaundice.
66.	<i>Plectranthus rugosus</i> Wall ex Benth.	Lamiaceae	Spirkay	Poisonous to fishes, used for fishing.
67.	<i>Polygonum barbatum</i> L.	Polygonaceae	Pulpulak	Timber wood, fuel wood leaves as fodder.
68.	<i>Prunus cornuta</i> (Wall).	Rosaceae	Barith	Fuel wood, leaves fodder, fruits edible. Epicarp of the fruit is called Nur-sawy mean male burning, is used for gonorrhoea, also used for bronchial asthma. Anardana is made from seeds.
69.	<i>Punica granatum</i> L.	Punicaceae	Anangoonry	Wood used for handles of plough, axes and diggers etc. fire wood, timber wood, leaves used as fodder for cattle.
70.	<i>Quercus baloot</i> Griffith. ( <i>Q. ilex</i> L.)	Fagaceae	Spin banj	Hard wood used for handles of plough, axes and daggers etc, firewood, timber wood leaves used as fodder for cattle.
71.	<i>Quercus dilatata</i> Lindley ex Royle	Fagaceae	Toor banj	Fruits edible, fuel wood, fences and hedges.
72.	<i>Rubus ellipticus</i> Smith.	Rosaceae	Gorach	Fruits edible, leaves as fodder for goats, fences and hedges.
73.	<i>Rubus fruticosus</i> L.	Rosaceae	Karwarra	Fruits edible.
74.	<i>R. sanctus</i> Schrabert	Rosaceae	Baganna	Fire wood, sheltering in mud made houses.
75.	<i>Rhus semialata</i> Murray.	Anacardiaceae	Titrai	

Table 1. (Cont'd.)

S.#	Species	Family	Local Name	Traditional local uses
76.	<i>Ricinus communis</i> L.	Euphorbiaceae	Arhunda	Fruits used for numerical calculations in Khatham-e- Quran by illiterate people.
77.	<i>Rosa macrophylla</i> Lindly.	Rosaceae	Kwarreh	Ornamental, fuel wood, fences and hedges.
78.	<i>Salvia moercroftiana</i> Wall ex. Bth.	Lamiaceae	Khar dug	Anti-tumor, antiseptic, used traditionally in daghona, roots used in cold and cough.
79.	<i>Spiraea lindleyana</i> Wall.	Rosaceae	Jahl	Fuel woods used in sheltering.
80.	<i>S. vacciniifolia</i> (D. Done).	Rosaceae	Soor lakhita.	Fuel woods, used in sheltering.
81.	<i>Saccharum spontaneum</i> L.	Poaceae	Kahi wakha	Fresh and dry fodder, straws are used to make baskets for keeping bares.
82.	<i>Salix deniculata</i> Anderson	Salicaceae	Walla	Fuel wood, leaves fodder, healing of warts.
83.	<i>Salvia lanata</i> Roxb	Lamiaceae	Kiann	Used as pot herb
84.	<i>Setaria viridis</i> (L.) P. Beauv.	Poaceae	jeshay	Used as dry and fresh fodder.
85.	<i>Silene conoidea</i> L.	Caryophyllaceae	Bushka	Fruits edible, fodder.
86.	<i>Solanum nigrum</i> L.	Solanaceae	Kuchmacho	Used as fresh fodder, vegetables, and juice, for skin diseases.
87.	<i>Taraxacum officinale</i> Weber.	Asteraceae	Ziar Gulay	Po herb, ornamental and purgative.
88.	<i>Trigonella emodi</i> Benth.	Papilionaceae	Phalli booti	Fresh fodder for cattle.
89.	<i>Urtica dioica</i> L.	Urticaceae	Jhal bung	Poisonous causes itching.
90.	<i>Valeriana jatamansi</i> Jones	Valerianaceae	Muskibala.	Used for stomachache and angina pectoris.
91.	<i>Verbascum thapsus</i> L.	Scrophulariaceae	Khurghwag	Antiseptic, anti-tumor, treatment of asthma.
92.	<i>Viburnum cotinifolium</i> D. Done.	Caprifoliaceae	Samungwal	Used as firewood, Leaves fodder, sheltering in mud made houses.
93.	<i>Viburnum grandiflorum</i> Wall.	Caprifoliaceae	Gharchamiry	Used as firewood, fodder, sheltering.
94.	<i>Vicia sativa</i> L.	Papilionaceae	Chilow	Fresh fodder, fruits edible.
95.	<i>Viola canescens</i> Wall. x Roxb.	Violaceae.	Banafsa	Blood purifier, cooling agent ornamental.
96.	<i>Xanthoxylum armatum</i> DC.	Rutaceae	Dumabra	Leaves used in chutney, seeds used as condiment, used as tonic for cows and buffaloes, also increased speaking power
97.	<i>Zizyphus sativa</i> Gaertn	Rhamnaceae	Murkhanai	Fuel wood, fences and hedges, leaves as fodder for goats, fruits edible.

Twelve species were locally used for making shelter in mud made houses. The preferred species included *Dodonaea viscosa*, *Elaeagnus umbellata*, *Indigofera heterantha*, *I. gerardiana*, and *Nerium indicum*. The locals used 8 species as ornamental plants including *Jasminum humile*, *Rosa macrophylla*, *Ipomoea purpurea* and *Nerium indicum*. Some of these species have been commercially exploited.

*Pinus roxburgii*, *P. wallichiana*, *Juglans regia*, *Aesculus indica*, *Melia azazracha*, *Morus nigra*, *Celtis caucasica* and *Olea ferruginea* were the timber wood plants of the area, which have become endangered due to heavy deforestation. *Pinus wallichiana* is the most valuable timber, only second to *Cedrus deodara*, which fetches very high price. Walnut wood is one of the most valued woods for furniture and other decorative items. It also provides handsome turn to the local people. Walnut is also priced for fruits and bark. Four species were used for making high quality furniture. They included *Dalbergia sissoo*, *Pinus roxburgii*, *P. wallichiana* and *Juglans regia*. Agricultural tools are made from *Quercus baloot*, *Q. incana* and *Parrotiopsis jacquemontiana*. The locals still use the traditional tools made from these species.

Fences and hedges are made from *Berberis lycium*, *Rubus ellipticus*, *R. fruticosus* and *Zizyphus sativa*. The spiny nature prevents stray animals not to enter the field or herd sheds. Three species were used for making baskets, mats and pens including *Phragmites karka*, *Heteropogon contortus* and *Saccharum spontaneum*. Honeybees visit *Justicia adhatoda*, *Cannabis sativa* and *Pimpinella diversifolia*. *Mentha longifolia* and *Xanthoxylum armatum* are used as condiments and flavoring agents. Two species were used for cleaning and sparkling of teeth. The bark of *Juglans regia* (locally called Dandasa) is regularly used as miswaks for teeth cleaning. *Hypericum perforatum* is used as substitute for tea/coffee. *Cannabis sativa* yield fiber and also is a narcotic plant. Milky latex obtained from leaves and stem of *Ficus carica*, is used as binding agent. *Urtica dioica* causes irritation of skin and itching.

The area is under heavy deforestation and overgrazing pressure, which has reduced regeneration of woody plants. Overgrazing has deteriorated the habitat, as there is no management of grazing land. Most of the medicinal plants are uprooted by the local people for selling or for fuel wood purposes and are also grazed heavily. There is a dire need to conserve the resources for our own survival. Forests are the resource that control the environmental pollution and provide livelihood not only to the local communities but to others as well.

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