

<http://www.pjbs.org>

**PJBS**

ISSN 1028-8880

**Pakistan  
Journal of Biological Sciences**

**ANSI***net*

Asian Network for Scientific Information  
308 Lasani Town, Sargodha Road, Faisalabad - Pakistan

## Ethnobotany of Gokand Valley, District Buner, Pakistan

Ambara Khan, Syed Shahinshah Gilani, Farrukh Hussain and Muffakhira Jan Durrani  
Centre of Biotechnology, University of Peshawar, Pakistan

**Abstract:** A survey was conducted to document the ethnobotanical potential of Gokand Valley, District Buner. The study was mainly focused on gathering information on traditional uses of plants from local peoples. The area has great biodiversity and rich in ethnobotanical utilization. Information on the ethnobotany was collected for 138 plant species which included 40 cultivated species. The local inhabitants used 50 as fodder and forage species, 46 for fuel wood purposes, 17 as vegetables, 17 as pot herb, 14 are defined as timber wood species, 5 species are used for making hedges and fences, 34 serve as fruit plants (12 cultivated and 22 wild fruits) 2 as fish poison, 3 soil builders and 2 as honey bee attractant. Deforestation for fuelwood and agricultural uses appears to be the most serious single threat to the vegetation as more than 90% of the houses use wood as the soul source for fuel. This shortage of fuel can be solved by planting fast growing trees on large scale and by protecting the existing planted trees and conserving the endangered species. The area has high potential for wild life and medicinal plants and as rangeland but ecological management including protection is required so that we can gift these resources to the coming generation.

**Key words:** Ethnobotany, gokand valley, buner, Pakistan

### Introduction

Gokand is a lush green mountainous valley, dominated by lofty mountains from all the sides except extreme south. It lies between 34°-33' to 34°-41' North latitude 72°, 30' to 72°, 34' east longitude on the globe. The valley is bounded by Pir Baba (Batai) and Qadir Nagar on the west, Jambail Kokarai in the north, Alpuri in the North East and Chgarzai in the east. Highest point in the area is Loe Sar having an altitude of 2334 meters while lowest is Hissar having an altitudes of 1200 meters.

The climate of Gokand valley is of subtropical type in the lower parts and temperate in the upper regions. In winter snowfall starts from about the end of November and continuous till the end of February at appropriate altitude. The weather is hot in June-July in the lower reaches.

The maximum rainfall occurs in the months of February, March and April while December and January are the driest months. The monsoon rains is high but of short duration of the total. 28.01% of the year precipitation falls in February to March and 54.06% of the yearly precipitation falls in July to September (Table 1).

There are mixed kail and broad leaved forests, blue-pine forest, chir-pine forests and scrub forests in the area.

Plants are the basis of life and provide food, medicines, timber for construction, fodder for our animals, materials for mats and baskets and many other useful items. Man utilizes plants for all of his basic needs, but usually does not acknowledge their potential use and the problems associated with excessive exploitation resulting in habitat losses and shrinkage in biodiversity. Hence it was realized

by scientists all over the world, to record the local knowledge about plants, their potential use, problems associated with plants and application of indigenous knowledge for the sustainable development of human beings.

Ethnobotany is the study of direct interaction between human and plant population through its culture. Chaudri and Qureshi (1991) indicated that as many as 709 species of the vascular plants of Pakistan, constituting about one fourth of vascular flora, are in danger of being gradually wiped out or exterminated altogether. Shinwari and Khan (2000) focused on information regarding traditional uses of plants of Kaghan Valley. Out of 48 medicinal species, only 26 are used by the local peoples and 21 plant species were animal fodder. Some woody plants are being utilized for making tools, handles, wheels, carts, plough, etc. besides some poisonous and ornamental species. Shinwari *et al.* (2000) while working on the medicinal plants of Pakistani Hindukush Himalayas, reported that 12% of the flora of Pakistan is used as medicinal plants and several of them are exported to various countries also. Watanabe *et al.* (2001) recommended 46 wild aromatic plants of Pakistan that could be adopted as minor cash crops because of their market value. Shinwari *et al.* (2002) gave an account of more than 300 medicinal plants to be traded in Pakistani herbal markets. Hussain *et al.* (1996) reported 125 species with various uses from Dabargai hills Swat. Ahmad (1996) listed plants with their uses from Sulatanr valley, Swat. Although some studies on the ethnobotany of other parts of Pakistan has been done but

no such reference exist for Gokand Valley, Distric Buner, Pakistan.

The present investigation was under taken to prepare an inventory of locally used medicinal plants and to document the local methods of preparing recipes for caring different ailments.

**Materials and Methods**

The study was conducted in difference parts of Gokand valley. The first trip was made in October – November 1997 (winter aspect) and second in June – July 1998 (Summer aspect).

The local names, uses and related information about plants were known through filling about 100 questionnaire and interviewing the farmers, foresters, hakeems (local herbal doctors), drug dealers and shopkeepers. Priority was given to elder people and hakeems, who were more knowledgeable about the traditional uses of medicinal plants.

Table 1: Monthly rain fall (mm) data for 1997 for Pirbaba Pacha Kalay

	Mean Max. Temperature (°C)	Mean Min. Temperature (°C)	Total Rain Fall (mm)	No. of Rairy Day	Humidity
January	15	1.55	2.00	1	80
February	15	5.00	156.00	7	76
March	17.80	6.00	228.00	12	75
April	22	7.50	195.5	9	61
May	26	14.00	101.5	8	46
June	33	24.88	31.00	2	41
July	34.55	24.00	50.00	4	65
August	30	18.66	170.00	6	70
September	30	14.00	80.00	4	63
October	26.50	9.50	19.00	3	66
November	22.54	6.90	26.00	3	68
December	18.00	2.50	13.00	2	70

Source: Agricultural office Pirbaba Pacha Kalay and Agriculture Statistics of N.W.F.P.(Buner)

An effort was made to collect complete specimen. They were dried and identified in the Botany Department, University of Peshawar and PCSIR, Peshawar through the available literature (Nasir and Ali, 1971 – 1995; Qaiser and Ali, 1995 – 2002) and were cobnfirmated at National Herbarium, NARC, Islamabad. A set of plants has been deposited in the herbarium.

**Results and Discussion**

Information on the ethnobotany was collected for 138 plant species including 40 cultivated species (Table 2). The local inhabitants used 50 as fodder and forage species, 46 for fuel wood purposes, 17 as vegetables, 17 as pot herb, 14 are defined as timber wood species, 5 species are used for making hedges and fences, 34 serve as fruit plants (12 cultivated and 22 wild fruits) 2 as fish poison, 3 soil builders and 2 as honey bee attractant. The vegetation of investigated area is under intense

deforestation and overgrazing pressure. The most serious single threat to the vegetation is the use of plant as fuel wood as more than 90% of the houses depend on forest fuel. This impact of fuel shortage can be solved by planting fast growing trees on large scale, and by protecting the existing planted trees and conserving the endangered species. Moreover, the area has high potential for wild life, medicinal plants and as rangeland. However, ecological management including protection is required so that we can save resources to the coming generation.

Old aged people frequently mentioned (65%) about plant uses while elders have (20%) awareness, young and children have (12%) and (3%) awareness respectively.

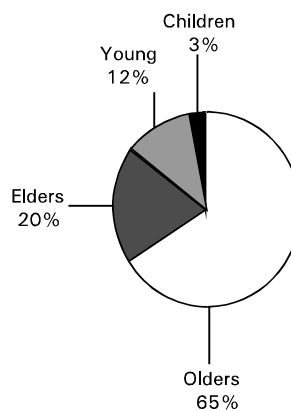


Fig. 1: Age-wise distribution of knowledge of medicinal plants in the local communities of Gokand Valley

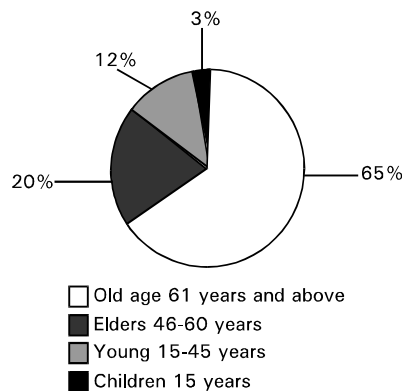


Fig. 2: Percentage of traditional knowledge obtained

**Recommendations**

1. Conservation education may be extended to the local communities and their local technologies may be incorporated in developing plans.
2. Traditional “Nagha system” may be encouraged for sustainable forest use.

Table 2: Brief ethnobotanical description of plants

No.	Botanical Name	Family	Local Name	Uses
1.	<i>Abelmoschus esculentus</i> (L) Moench.*	Malvaceae	Bhindi	The leaves are used for washing utensils, while fruits are used as vegetable and are sold in market.
2.	<i>Acacia catechu</i> (Linn. F.) Willd.	Mimosaceae	Zunda	The leaves are used as fodder for goat. Wood is used in the manufacturing of agricultural tools and wooden pullies. It is also used as fuel wood.
3.	<i>Acacia modesta</i> Wall	Mimosaceae	Phalosa	Leaves are used as fodder. Wood is used for making agricultural tools and also as fuel wood.
4.	<i>Acacia nilotica</i> (Linn.) Delile ssp. <i>Nilotica</i>	Mimosaceae	Kikar	The leaves are used as fodder for goat. Wood is very hard and durable which is used in the construction of houses, and agricultural tools, also used for fuel purposes.
5.	<i>Aesculus indica</i> (Wall ex Cambel) H.K.f.	Hippocastaneaceae	Jawaz	The leaves are used as fodder. The fruits are used for treating colic pains in horses. The wood is used for making furniture, agricultural appliances and household utensils, and used as a timber wood.
6.	<i>Ailanthus altissima</i> (Mill) Swingle *	Simarubaceae	Backyanra	The leaves are used as fodder for cattle. The wood is used for construction and making low class furniture and also used as fuel wood.
7.	<i>Allium cepa</i> Linn.*	Alliaceae	Piaz	Onion juice is administered in tobacco poisoning also used as spice and condiment.
8.	<i>Allium sativum</i> Linn.*	Alliaceae	Ooga	Vegetable, carminative, aromatic, stimulant, spice.
9.	<i>Alnus nitida</i> Endl.	Betulaceae	Geiray	The wood is used as a fuel wood, for making agricultural appliances and prevents soil erosion.
10.	<i>Amaranthus caudatus</i> Linn.	Amaranthaceae	Chalwairay	The shoots are used as a pot herb.
11.	<i>Amaranthus spinosus</i> Linn.	Amaranthaceae	Chalwairay	The shoots are leafy vegetable.
12.	<i>Amaranthus viridis</i> Linn.*	Amaranthaceae	Gunhar	The plant is leafy vegetable and pot herb.
13.	<i>Arisaema jacquemontii</i> Blume	Arecaceae	Marjarai	The rhizome/bulb is believed to help in tracing bears.
14.	<i>Artemisia scoparia</i> Waldst.	Asteraceae	Jaukay	The shoots are used for making broom, sweeping lawns.
15.	<i>Artemisia vulgaris</i> Linn.	Asteraceae	Tarkha	It is fodder for goat. Brooms are made from it for sweeping lawns.
16.	<i>Asparagus officinalis</i> Linn.	Liliaceae	Taunter	The young shoots are used as vegetable.
17.	<i>Asphodelus tenuifolius</i> Cavan.	Liliaceae	Piazakay	It is used as condiment.
18.	<i>Avena sativa</i> Linn.	Poaceae	Jamdar	It is used as fodder for cattle.
19.	<i>Bambusa bambos</i> (L.) Voss ex Vilm. *	Poaceae	Bans	The branches are used as building material for making ladder, thatching huts, carts, pipes. The split stem is woven into baskets and mats.
20.	<i>Bauhinia variegata</i> Linn.	Caesalpinaceae	Kulyar	It is a timber and fuel wood plant. Floral buds are used as vegetable.
21.	<i>Berberis lycium</i> Royle.	Berberidaceae	Kwaray	The fruits (Berries) are edible. It is also used as hedge plant.
22.	<i>Brassica campestris</i> Linn.	Brassicaceae	Sharshum	Young leaves and inflorescence called Ghandal, are used as vegetable. Mustard oil is extracted from seeds, which is used for cooking and massage. Seed cake locally called "Da sharshumo Khal" is obtained after extracting oil and is used as fodder for cattle.
23.	<i>Capsella bursa-pastoris</i> (Linn.) Medic.	Brassicaceae	Bambaisa	The leaves and flowering tops are used as vegetable. Also serve as a fodder.
24.	<i>Capsicum annum</i> Linn.*	Solanaceae	Marcha Kay	The fruits are used as condiment, used as salad raw or pickled.
25.	<i>Caralluma edulis</i> (Edgew.) Bth ex Hk. f.	Apocynaceae	Pamunkay	It is cooked as vegetable. It is sold at the cost of Rs. 30-40 per Kg. in market.
26.	<i>Celtis australis</i> Linn.	Ulmaceae	Tagha	The leaves are used as fodder. The fruits are edible. The wood is used for making agricultural tools and as a fuel wood.
27.	<i>Chenopodium album</i> Linn.	Chenopodiaceae	Sarmai	The leaves serve as pot-herb.
28.	<i>Cichorium intybus</i> Linn.	Asteraceae	Han	The whole plant is used as pot herb and fodder.
29.	<i>Conyza boneriansis</i> Linn.	Asteraceae	-	It serves as a fodder for cattle.
30.	<i>Coriandrum sativum</i> Linn.*	Apiaceae	Dhanyal	The fruits and seeds are used as spices and flavouring agents. The leaves are used as salad.
31.	<i>Cotoneaster mummularia</i> Fish and May.	Rosaceae	Kharawa	The stem and branches are used for making walking sticks, agricultural appliances. It is also used for making fences.
32.	<i>Cucurbita maxima</i> Duch. Ex Lam.*	Cucurbitaceae	Metha Kadoo	The young leaves and fruit are used as vegetable.
33.	<i>Cucurbita pepo</i> Linn. *	Cucurbitaceae	Kadu	The young leaves and fruits are used as vegetable.

Table 2: Continue

No.	Botanical Name	Family	Local Name	Uses
34.	<i>Cynodon dactylon</i> Linn.	Poaceae	Kabal	It is fodder for cattle and common lawn and playground grass as well as prevent soil erosion.
35.	<i>Dalbergia sissoo</i> Roxb.	Fabaceae	Shawa	The wood is valuable and highly priced in furniture industry. It is also a good timber wood. It is used for making agricultural appliances. Branches are burnt as fuel wood.
36.	<i>Daphne oleoides</i> Schreb.	Thymeleaceae	Kutilal, Laighonai	The fruits are edible. It is a fuel wood.
37.	<i>Debregeasia salicifolia</i> (D. Don) Rendle	Urticaceae	Ajlai	The branches are used as fuel wood and the fruits are edible.
38.	<i>Delphinium aquilegefolium</i> (Boiss.) Barnom.	Wariguli	-	It is used as an ornamental plant.
39.	<i>Desmodium telicæfolium</i> (D. Don) G. Don	Fabaceae	-	The leaves are fodder for goat. The branches are used as fuel wood.
40.	<i>Diospyros kaki</i> Linn. *	Ebenaceae	Toor amlook	The fruit is edible and sold in the market. The branches and stem are used as fuel wood.
41.	<i>Diospyros lotus</i> Linn.	Ebenaceae	Toor amlook	The fruits are edible, and sold in the market. The leaves serve as fodder. The wood is a source of fuel wood.
42.	<i>Dodonaea viscosa</i> L. (Jacq).	Sapindaceae	Ghwaraskay	It is used as hedge and ornamental plant. Brooms are made from shoot. It is best fuel wood plant.
43.	<i>Duchesnea indica</i> Andr.	Rosaceae	Da Zmaki toot	The fruits are edible.
44.	<i>Ehretia obtusifolia</i> Hochst. Ex. DC.	Boraginaceae	Ghada Botay	The leaves are fodder for cattle, while wood is hard and is used for making agricultural implements.
45.	<i>Elaeagnus umbellata</i> Thunb.	Elaeagnaceae	Ghanum ranga	The fruits are edible. It is a fuel wood species.
46.	<i>Equisetum arvense</i> Linn.	Equisetaceae	Bandakay	The shoots extract mixed with mustard oil is used as hair tonic and antilice.
47.	<i>Eruca sativa</i> Miller	Brassicaceae	Jamama	The leaves are used as a vegetable. The seeds are used for the extraction of oil.
48.	<i>Eryngium biebersteinianum</i> Nevski	Apiaceae	Ali Kanda	The shoots are fodder for camels and goats.
49.	<i>Euphorbia helioscopia</i> Linn.	Euphorbiaceae	Mandanoo	The milky juice obtained from the plant is virulent poison. It is also fish poison. When cooked with any other pot-herb, it depresses its flavour.
50.	<i>Ficus carica</i> Forsk. *	Moraceae	Enzar, Anjeer	The leaves are fodder for goat. The fruits are edible. The wood serves as fuel wood. Sometimes it is used for naming persons such as Enzar gul.
51.	<i>Ficus palmata</i> Forsk.	Moraceae	Enzar	The leaves serve as fodder for cattle. The fruits are edible. The branches serves as fuel wood.
52.	<i>Ficus recemosa</i> Linn.	Moraceae	Oormal	The fruits are edible. The wood is used as fuel wood.
53.	<i>Ficus religiosa</i> Roxb.	Moraceae	Peepal	The fruit is edible. It is low cost fuel wood.
54.	<i>Foeniculum vulgare</i> Miller. *	Apiaceae	Kaga	The fruits are aromatic and used as condiments and flavouring agents.
55.	<i>Fumaria indica</i> (Husskn.) H. N. Pugsley.	Fumariaceae	Papra	The leaves are used as pot herb.
56.	<i>Grewia optiva</i> Drum. ex Burret	Tiliaceae	Pustawoonay	The leaves are fodder for cattle. The fruits are edible. Fibre is obtained from inner bark, which is used for making rope.
57.	<i>Gymnosporia royleana</i> Wall ex Lawson.	Celastraceae	Soor azghay	The young shoots are fodder for goat. It is also used as hedge plant, and for burning as fuel wood.
58.	<i>Helianthus annuus</i> Linn.*	Asteraceae	Nwar paras	The seeds yield edible oil, which is used for cooking.
59.	<i>Hordeum vulgare</i> Linn.*	Poaceae	Warbasy	It is a cereal and green fodder, specially fed to cattle, donkeys, horses and goat as source of energy. Straw is dried for fodder. The grains are used as bread.
60.	<i>Hypericum perforatum</i> Linn.	Hypericaceae	Shein Chai	In the past it was used a green tea by local people, but now due to availability of good quality tea, it has been abandoned.
61.	<i>Indigofera heterantha</i> Wall. ex Brand. var <i>heterantha</i>	Fabaceae	Ghouraja	The shoots are fodder for goat. The young branches are twisted into ropes. It serves as fuel wood. Wood ash is used for making snuff.
62.	<i>Ipomoea cairica</i> Jacq.	Convolvulaceae		It serves as a fodder.
63.	<i>Jasminum humile</i> Linn.*	Oleaceae	Zair Rambail-chambail	Cultivated as ornamental plant. Root decoction is useful in curing ringworms.
64.	<i>Jasminum officinale</i> Linn. *	Oleaceae	Spin Rambail Chambail	Cultivated as ornamental plant.
65.	<i>Juglans regia</i> Linn.	Juglandaceae	Ghuz	The wood is very valuable for furniture, wood carving, gunstocks, and nuts find a ready market. Fruits called Ghuz are edible. The bark is used as "DANDASA" for cleaning teeth, gums. It is cosmetic also which is fairly common in ladies for colouring lips.

Table 2: Continue

No.	Botanical Name	Family	Local Name	Uses
66.	<i>Lathyrus aphaca</i> Linn.	Fabaceae	Kukarmanay	It is used as pot-herb and also as a fodder.
67.	<i>Lathyrus sativus</i> Linn.	Fabaceae	Chillo	It serves as a fodder and fresh seeds are also eaten.
68.	<i>Launaea procumbens</i> Roxb.	Asteraceae	Shodapai	Young shoots are eaten by goat. Leaves are used for washing utensils.
69.	<i>Lespedeza juncea</i> (L.f.) Persoon.	Fabaceae	Oormaray	It is used as fodder.
70.	<i>Luffa cylindrica</i> (L.) Room.*	Cucurbitaceae	Toorai	The young fruits are eaten as vegetable and when the outer skin is removed from the ripe fruit, what remain is used as sponge. Leaves are also used along with ash for washing utensils.
71.	<i>Mallotus philippensis</i> Muell.	Euphorbiaceae	Kambeela	The Wood serve as fuel wood.
72.	<i>Malus pumila</i> Mill.*	Rosaceae	Manra	Fruit is edible and sold in the market. The branches are used as fuel wood. The wood is hard and tough and used for making agricultural appliances.
73.	<i>Malva neglecta</i> Wall.*	Malvaceae	Panaruk	It is cultivated as pot-herb and for ornamental purposes.
74.	<i>Melia azedarch</i> Linn.	Meliaceae	Toora backyana	Leaves are fodder for goat. the wood yield timber, used for making building material and also used for making furniture.
75.	<i>Mentha longifolia</i> (L.) Huds.	Lamiaceae	Velanay	The leaves are cooked with other vegetables because they are flovuimg agents and aromatic.
76.	<i>Mentha spicata</i> Linn.*	Lamiaceae	Podina	The leaves are used for chuttnies, salad, spice and flavouring agent. The leaves decoction is used as mouth wash.
77.	<i>Morus indica</i> Linn.*	Moraceae	Spin toot	The leaves serve as fodder for cattle. Fruits are edible. The wood yield timber, used for making furniture, also used as fuel wood. Large Baskets called kangrai are made of flexible branches.
78.	<i>Morus nigra</i> Linn.*	Moraceae	Toor toot	The leaves are fodder for cattle. Fruits are edible. The wood yield timber used for making furniture, also as fuel wood. Baskets called kangrai are made of branches.
79.	<i>Musa sapientum</i> Linn.*	Musaceae	Keela	The fruits are edible.
80.	<i>Myrsine africana</i> Linn.	Myrsinaceae	Maru-rang	The shoots serve as fodder for goat.
81.	<i>Narcissus tazetta</i> Linn.	Amaryllidaceae	Gul-e-Nargis	Cultivated as ornamental plant.
82.	<i>Nasturtium officinale</i> R.Br.	Brassicaceae	Tulmeera	The plant is used as pot-herb.
83.	<i>Nerium indicum</i> Mill.	Apocynaceae	Gundaray	The plant is ornamental but poisonous.
84.	<i>Olea ferruginea</i> Royle.	Oleaceae	Khuna	Leaves are fodder for goat. The leaves decoction is used for toothache. The wood is very hard and used for making sticks, agricultural tools, construction, also used as fuel wood.
85.	<i>Opuntia dilenii</i> Haw.	Cactaceae	Zuqum	The fruits are edible.
86.	<i>Origanum vulgare</i> Linn.	Lamiaceae	Shamakay	Used as fodder for cattle and for washing utensils.
87.	<i>Oryza sativa</i> Linn.*	Poaceae	Shooli	Cultivated as cereal crop. Straw is fed to horses and donkeys, also used for washing utensils and in packing baskets of apples, persimmons and other fruits.
88.	<i>Otostegia limbata</i> (Bth.) Boiss.	Lamiaceae	Pishkarr	It is used as hedge plant and fuel wood.
89.	<i>Oxalis acetosella</i> Linn.	Oxalidaceae	Tarookay	The Fresh leaves are used as vegetable.
90.	<i>Parratiopsis jacquemontiana</i> (Don) Rehder	Hamamelidaceae	Bearunj	The shoots are fodder for goats and cattle. Main stem is used for making agricultural tools, utensils, sticks, also used as fuel wood.
91.	<i>Peganum harmala</i> Linn.	Zygophyllaceae	Spalanay	It is believed to be devil repellent and also used against evil eyes (Nazari bad).
92.	<i>Pinus roxburghii</i> Sargent.	Pinaceae	Nahtar	Wood yields timber, which is used for construction, furniture; branches are used as fuel wood. It is source of charcoal. Resin is exported and is used in paints and varnishes. The needles locally called "BER" are used for making ropes.
93.	<i>Pinus wallichiana</i> A.B. Jackson.	Pinaceae	Peewuch	It is second best timber wood in Pakistan and is highly priced. Cones are fuel wood. Also used for making furniture and decoration items. The branches are used as fuel wood. Resin is used in paints and varnishes.
94.	<i>Pistacia integerrima</i> Stewart. ex Brandis	Anacardiaceae	Shnai	The leaves are fodder for cattle. The wood yield timber, which is used for making furniture. The branches serve as fuel wood.
95.	<i>Pisum sativum</i> Linn.*	Fabaceae	Mattar	The leaves and fruits are used as vegetable.
96.	<i>Platanus orientalis</i> Linn.	Platanaceae	Chinar	It is a shade tree, which yields timber. The wood is used as fuel wood, and for making furniture.

Table 2: Continue

No.	Botanical Name	Family	Local Name	Uses
97.	<i>Plectranthus rugosus</i> Wall. ex Bth.	Lamiaceae	Burtus	It is fodder for goat, cattle. It also serve as a fuel wood species. It is a good source of honey (Bee keeping).
98.	<i>Polygonum barbatum</i> Linn.	Polygonaceae	Pulpoluck	The leaves are crushed with sand and used as fish poison.
99.	<i>Populus caspica</i> Bornm.*	Salicaceae	Sperdar	The leaves serve as fodder for cattle. It provides timber wood, which is used in match industry. Branches are used as fuel wood.
100.	<i>Populus ciliata</i> Wall.	Salicaceae	Zangali sperdar	The leaves are used as fodder for cattle. The wood is timber wood which is used in match industry. The branches serve as fuel wood.
101.	<i>Portulaca oleracea</i> Linn.*	Portulacaceae	Warkharae	It is used as pot-herb.
102.	<i>Potentilla nepalensis</i> HK.	Rosaceae	Kunachi	The fruits are edible.
103.	<i>Prunus americana</i> Marsh.*	Rosaceae	Khobanai	The leaves are fodder for cattle. The fruits and seeds are edible, and sold in market also dried and exported to plains. Branches serve as fuel wood.
104.	<i>Prunus domestica</i> Linn.*	Rosaceae	Alu Bokhara	The fruits are edible and used in chutnies. The Branches serve as fuel wood.
105.	<i>Prunus persica</i> Linn.*	Rosaceae	Shultalo	The fruits are edible. The branches serve as fuel wood.
106.	<i>Pteridium equilinum</i> (L.) Kuhn.	Pteridaceae	Kunjai	The young fronds are used as pot herb.
107.	<i>Punica granatum</i> Linn.*	Rosaceae	Ananghorai	Seeds are dried as anardana which is condiment.
108.	<i>Pyrus communis</i> Linn. *	Rosaceae	Nashphatai	Fruit are edible, sold in the market. The wood is used as fuel wood.
109.	<i>Pyrus pashia</i> Ham. ex D.Don.	Rosaceae	Tangai	The fruits are edible. The wood serve as fuel wood. It is commonly used for grafting of <i>Pyrus malus</i> and <i>P. communis</i> i.e. Root stock.
110.	<i>Quercus dilatata</i> Lindl. ex Royle.	Fagaceae	Spin Bunj	The wood serve as fuel wood, due to toughness it is used for making agricultural tools, sticks ploughs, also as timber wood and as a hedge plant.
111.	<i>Quercus incana</i> Roxb.	Fagaceae	Toor Bunj	The wood is used for making agricultural tools, specially ploughs, sticks, also serve as fuel wood and timber wood.
112.	<i>Raphanus sativus</i> Linn.*	Brassicaceae	Mooli	The young leaves are used as pot-herb and salad.
113.	<i>Rhododendron arboreum</i> Smith.	Ericaceae	Gul-e-Nameer	The flowers are edible and sold in the market for ornamental purposes.
114.	<i>Rubus fruticosus</i> HK.f.	Rosaceae	Karawara	The fruits are edible. The leaves are fodder for cattle. It is used as hedge plant for bordering fields.
115.	<i>Rubus ulmifolius</i> Schott.	Rosaceae	Gouraj	The shoots are fodder for goat. the fruits are edible. It is also used as hedge plant around fields.
116.	<i>Rumex dentatus</i> Linn.	Polygonaceae	Shulkhae	The leaves serve as pot-herb.
117.	<i>Rumex nepalensis</i> Spreng.	Polygonaceae	Da Ghra Shulkhae	The leaves are used as pot-herb.
118.	<i>Saccharum bengalense</i> Retz.	Poaceae	Shurghashay	The leaves and stem called calums are used for thatching huts for animals as well as for making baskets.
119.	<i>Saccharum officinarum</i> Linn.*	Poaceae	Ghanay, Sugar cane	The leaves called patri are fodder for cattle. Gur is obtained from sweet juice extracted from its stem, also chewed by local people.
120.	<i>Saccharum spontaneum</i> Linn.	Poaceae	Kahai	The stem called calum is woven into winnowing trays locally called "Chaj". Brooms are made for sweeping from flowering scape; used for roof thatching.
121.	<i>Salix tetrasperma</i> Roxb.	Salicaceae	Wala	It is planted to prevent water erosion of soil. Wood is used for making furniture. Branches serve as fuel wood.
122.	<i>Salvia lanata</i> Roxb.	Lamiaceae	Kianr	It is used as a pot-herb.
123.	<i>Salvia moorcraftiana</i> Wall. ex Bth.	Lamiaceae	Khur dug	The leaves are used for washing utensils and by young girls as Henna.
124.	<i>Sapindus mukorossi</i> Gaertn.	Sapindaceae	Ritha	The fruit is used as detergent and hair wash.
125.	<i>Sarcococca saligna</i> (Don) Duel.	Buxaceae	Ladanr	The flowers are used honey bee keeping.
126.	<i>Silene conoidea</i> Linn.	Caryophyllaceae	Manghotay	The shoots are used as vegetable. The fruits are edible.
127.	<i>Skimmia laurole</i> (DC) stb & Zanc ex. Wall.	Rutaceae	Nazar Panra	Generally it is believed that smoke of leaves purify air and repel evils.
128.	<i>Sonchus asper</i> Linn.	Asteraceae	Shoda Pai	fodder for cattle.
129.	<i>Sorghum halepense</i> (Linn.) Bers.	Poaceae	Dadum	Fodder for cattle.
130.	<i>Trifolium repens</i> Linn.*	Fabaceae	Shoutal	It is used as fodder and pot-herb.
131.	<i>Trigonella foenum-graecum</i> Linn.*	Fabaceae	Malkhulazai	It is a pot herb and fodder for cattle.
132.	<i>Viburnum continifolium</i> (D.Don) Wall ex. D.C	Caprifoliaceae	Chamyarai	The fruits are edible. Branches serve as fuel wood, also used as hedge plant.

Table 2: Continue

No.	Botanical Name	Family	Local Name	Uses
133.	<i>Vigna mungo</i> Linn.*	Fabaceae	Mai	The plants are used as forage for cattle. The seeds are used as pulses.
134.	<i>Vigna radiata</i> Linn.*	Fabaceae	Mahai	The seeds are used as pulse legume and also fodder for cattle.
135.	<i>Vitis jacquemontii</i> Parker.	Vitaceae	Ghedar Kwar	The fruits are edible.
136.	<i>Zanthoxylum armatum</i> D.C.	Rutaceae	Dambara	The seeds are aromatic, flavouring agents, condiments and used in chutnies. The branches are used as fuel wood, and as hedge plant.
137.	<i>Zizyphus jujuba</i> Mill	Rhamnaceae	Beera	The leaves are used as fodder for goat. the fruits are edible.
138.	<i>Zizyphus nummularia</i> (Burm.f) Wight & Arn.	Rhamnaceae	Karkanda	The fruits are edible. The leaves are fodder for goat. Also used as hedge plant for bordering fields and as fuel wood.

\* Indicat cultivated plants

3. Energy efficient and locally tested stove system may be introduced in community area around Gokand valley. This may help in reduction of pressure fuel wood.
4. Royalty of locals in the forest must be ensured for the assured forest protection.
5. Basic facilities of communication, electricity, education and health may be provided locally.
6. Cultivation of the economical medicinal, fruit yielding and fodder plants may be introduced and people may be trained in its processing and marketing demands.

## References

- Ahmad, R., 1996. Ethnobotanical studies of Sulatanr Valley, District Swat. M.Sc. Thesis, Deptt. Botany, ICP, University of Peshawar.
- Chaudri, M.N. and R.A. Qureshi, 1991. Pakistan Endangered Flora. 11A. Checklist of rare and seriously threatened taxa of Pakistan. Pak. Syst., 5: 1-84.
- Hussain, F., A. Khaliq and M.J. Durani, 1996. Ethnobotanical studies on some plants of Dabargai Hills, District Swat, Pakistan. In Z. K. Shinwari, B. A. Khan and A. A. Khan, Proceedings of the First Training Workshop on Ethnobotany and its application to conservation, National Herbarium, PARC., Islamabad, Pakistan, pp: 207-215.
- Shinwari, M. I. and M. A. Khan, 2000. Fodder species of Margalla Hills National Park, Islamabad, Pakistan. Pak. J. Biol. Sci., 3: 10-17.
- Shinwari, Z.K., S.S. Gilani, M. Kohjoma and T. Nakaike, 2000. Status of medicinal plants in Pakistani Hindukush Himalayas. In T. Watanabe, A. Takano, M. S. Bistan and H. K. Saiju (Eds.). Proceedings of Nepal - Japan Symposium on conservation and utilization of Himalayan medicinal resources. November 6 – 11, 2000, Kathmandu – Nepal. pp: 257 - 264.
- Shinwari, Z.K., S.S. Gilani and M. Shaukat, 2002. Ethnobotanical resources and implications for curriculum. In Z. K. Shinwari, A. Hamilton and A. A. Khan (Eds.). Proceedings of workshop on curriculum development in Applied Ethnobotany. May 2 – 4, 2002, Nathiagali, Abbotabad. WWF – Pakistan, pp: 21 – 34.
- Watanabe, T., H. Watanabe, S.S. Gilani, I.K. Wazir and Z.K. Shinwari, 2001. Survey of wildflowers in Pakistan (1) Conservation and utilization of medicinal plants of Islamabad. Aroma Research Japan, 2: 195 – 201.