

Ethnobotanical Resources of Manikhel Forests, Orakzai Tirah, Pakistan

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Abstract

Manikhel forests, the far southern extension of Hindu Kush Mountain ranges, exhibit rich floral diversity in its nearly 175 Km² area. It comprises sub-tropical semi deciduous thorny forests in the southern low lying Mediterranean type of climate and evergreen Oak-Yew forests in the northern faces of the Himalayan type of climate. A wide variety of plants are present in the area but this paper includes only those species whose common use is either known locally or they are in daily use for various purposes. The present investigations comprise 172 plant species belonging to 80 families. Bulk of these plants exhibit multiple uses. The local population is entirely rural and poor. They are primarily dependent on the forest resources for their necessities.

Key words: Manikhel forest; Plant resources; Folk uses

Introduction

Manikhel forests can be traced in the tribal belt between latitude 33° 41' and 33° 43' North and longitude 70° 05' and 71° 10' East, near Pak-Afghan border. It forms an integral part of the tribal economy residing inside and all around it. The basic needs like energy in the form of food, feed, fuel wood, torchwood, water for drinking and water mills are directly or indirectly got from these forests. The material of day to day use like wood for construction, logging, furniture, medicine, trade and goods for cottage industry are harvested from these forests.

The area is devoid of major civic amenities. Recently it has got a metal road and is communicated with digital telephone. Electricity, schools and health facilities, which bring changes in the local culture, are scarce in the area. This paper is an attempt to provide an insight to the unreported hardship area of the region, which will hopefully provide a base for sustainable development of the floral resources of the area.

Results

Data collected regarding the ethnobotanical survey of the area is summarized in Appendix No. 1 and briefly discussed here as under.

1. Potential plant resources

The area lies in the extension belt of Sino-Japanese region and within the widespread Irano-Turanian region in the south and east. It also has an influence of Indian region as well. Thus the area has accumulated a variety of plant types ranging from tropical to subtropical and upto temperate regions on the northern aspects. Both the elements of moist and dry temperate regions are there. All these facts give special identity to Manikhel forest. A wide variety of plants

are there but this report includes only those species whose common use is either known locally or they are in daily use for various purposes.

This report includes 172 species belonging to 80 families. Their local uses can be split into 45 categories as given in Table 1. The details of plants, their local use and their local names are presented in Appendix 1. It is beyond the scope of this report to discuss each and every plant individually, a brief commentary of the locally most important species are discussed here:

2. Bush food:

Bush food (Falconer, 1992) in its broader sense can be used for all the edible wild plants and animals and their products like waxes, honey etc. The plants used in Manikhel forest in the form of wild fruits, Pot herbs, beverages, spices, cash plants, dry fruits, fodder and forage species supply a fraction of the food requirements of the people. Species involved in food supply from Manikhel forest is given in Appendix 1. Though it seems to have little economic importance, yet it forms an integral part of the local economy and culture. Socially serving guests with bush meat or morals is a sign of prestige and the use of local herbs and spices gives taste and quality to the dishes served to be.

The availability of bush food varies from season to season and there are some locals who can very easily guide the ethnobotanists (through the toponyms) for its easy accessibility. For example if any one who wants to observe blue pines, the local in this regard direct him to Nakhtarro Ghar (Nakhtar: Blue pine, Ghar: Hill). Hence exploiting local knowledge in this regard will minimize the wastage of time, energy and money.

In spring the forest bottom flourishes with the costly Karkachoks (*Morchella esculenta*) and a variety of soil and arboreal mushrooms (locally called Shishtaryae). The soil also flourish a variety of culinary herbs among which the young fronds of male ferns and shoots of *Medicago* and leaves of *Rumex nepalensis* and flowers of *Bauhinia variegata* (karyal) are used by most of the families as vegetable. The tasty fruits of *Reptunia buxifolia* (Gwargwaryea), *Pistacia Khinjak* (Shinayae), *Rubus ulmifolius* (Manzakha), *Ficus palmata*, *Ficus glomerata*, *Grewia optiva* (Pasthawonyae), *Celtis australis* (Tagha), *Carissa ophaca* (Khkar Meeva), *Olea cuspidata* (Khawand), *Juglans regia* (Ghwaz), and *Zizypus jujuba* (Bera) provide subsistence food, spices and a source of precious vitamins to the local communities, especially coming to the forest for resource collection or livestock herding. The delicious pot herb which we observed is *Phytolacca lithania* whose fruits are also boiled in water and used locally as ink.

Some of these products e.g. honey, morals, fruits of walnuts, *Reptonia*, *Ficus*, and the flowers of *Bauhinia* are collected and sold in the local market, thus providing earning base especially to the poor community.

3. Herbal Medicine:

Herbal medicine, their pharmacognastic characterization and their rational uses are actually the cultural assets lying viable and remained preserved in the remote cut off areas like Kohi Sufaid. In Pakistan 80% of the people belonging to the rural areas still depends upon the herbal medicines (Anonymous, 1997). Manikhel area has an immense potential of herbal medicines preliminary survey of the medicinal plants of the area are presented in Appendix 1. Traditionally the Sikh inhabitants of the area are considered more knowledgeable and serve the community as local healers.

People of the local community have some mythical beliefs regarding some of the medicinal plants found locally. The two myths we commonly heard were about Makhkak (*Valeriana wallichii*) and Mamera (*Corydalis stewartii*). According to the local beliefs both the species has divine potential of healing injuries. According to one legend a gentle man injured on his foot, found nothing for first aid so he put tightly the leaves of the nearby herbs on his

bleeding wound. On return to home he reopened the leaves dressing and it is told that there was no mark of the wound visible. The second legendary plant is *Corydalis stewartii* and according to local people the young of “Thora thethi” a black bird cannot open their eyes until they are administered by the twigs of Mamera. Both Mamera and Makhkak are locally used in Ophthalmic diseases and in healing wounds respectively. Makhkak is also administered against body weight. The dried powder of Randa jok (*Alkana tenctoria*) rhizomes are applied as topical antibiotics and are applied to chronic wounds. It is also considered as tonic in small amounts and is taken orally.

The area is malarious and is locally treated by taking fresh Shna Sperkayea (*Plectranthus ramosus*) shoots, though its excess sometime causes injurious effects. The gastric flatulence and allergies are locally treated by the oral administration of powder of Tora Baiza (*Adhatoda vasica*). Norr-i-Alam (*Polygonatum verticillatum*) and Kukar Mar (*Arisaema utile*) are legendary herbs used as aphrodisiac, the latter needs special preparations whereas the former is of common use especially in the older people for enhancing sex capabilities. The root extract from Kaskye (*Indigofera gerardiana*) is given in dyspepsia. The latex of Aq Tandoryae (*Calotropis procera*) is used for regeneration of hairs specially in ploughing bulls. *Thymus serpyllum*, *Ricinus communis* and *Aloevera* (common herbs in the area) has broad medicinal applications but the local community has little knowledge of its use.

4. Construction Material:

Most of the settlements in Manikhel are katcha (Made of mud). The people live a semi-nomadic life style and their houses vary according to the prevailing conditions and duration of stay. For example the houses in the villages are mostly katcha, with typically wider stories, clay wall having bunkers inside. In high mountains meadows the houses are generally made of stone walls with the supporting woods inside, whereas in the southern plains the villages are generally in the form of caves inside the cliff arcs. These caves are locally known as Garyae, and really present a marvelous way of primitive life standard in the 21 century. Houses in the villages and in high mountains needs wood for their construction, but in Garyae no construction wood is needed except a hedge in its front to avoid the entrance of livestock or wolves at night time. For making houses the order of preferences varies with the function and availability/accessibility of wood. For pillars the most preferred wood is *Olea* followed by Oak, yew, walnut, blue pine and the least preferred is that of *celtis* and *Bauhinia*. For beams the order of preference remains the same. But for smaller cross beams the most preferred wood is that of Yew followed by Blue pine, *Parroitopsis*, *Olea*, *Juglans*, *Quercus* and others. For course packing the shoots of *Olea*, Oak and *Taxus* are the first preferences which are then covered with a layer of bushes like *Plectranthus ramosus*, *Indigofera*, *Sophora*, *Peroskia* and ferns in the descending order of preference locally.

Traditionally the houses in the Orakzai has the same basic plan of roofing i.e. a layer of fine bushes just below the clay cover, a layer of branches from trees, a layer of small cross beams and large beams supporting the whole roof

5 Fuel Wood:

Fuel wood is one of the most important basic needs in Orakzai Agency. It is exclusively fulfilled from the forests. The most preferred wood in the area is oak followed by *Olea*, Yew, bird cherry, willow, mulberries and walnuts etc. In Manikhel area felling in the forest is completely banned. Women go early in the morning to the forest and bring the lopped wood specially that of Oaks for their daily use. Besides these each and every plant which is otherwise useless is generally exposed to burning as fuel wood. Fuel wood selling provide earning base to the local community.

6 Cottage Industry:

Mazaryae (*Nannorohps ritchieana*) is the very important forest species used for making mats, hand fans, ropes and baskets. It is used in local practice or is collected and sold in the nearby markets as raw. A variety of grasses are used

for the formation of baskets and decoration pieces locally.

7 Cash earning species:

Karkachoks (Marals) are generally collected by women and children from the forest, and sold in the market with handsome earning. The sweet fruits of Gurgoryae (*Reptonia buxifolia*) are collected and sold locally or supplied to Kohat and Peshawar. Similarly the walnuts are also sold with better rewards in the market.

8 Furniture and Agricultural tools:

For furniture walnuts are the most preferred wood, whereas the doors and windows etc. are generally made up of blue pine and cheer pine. Willows are used for making sleeping beds. *Celtis* wood is preferred for making yokes, whereas, most of the parts of the plough other than yokes are made of oaks i.e. for sticks and handles etc. *Parroitoopsis* and *cotoneaster* are generally preferred.

9 Fodder species:

Livestock keeping is one of the vital economic source forming integral part of the traditional tribal community. It provides calories in the form of animal fats, milk, and its products and the essential proteins for the livelihood of the local people. It also yield earning through its trade and selling its products. A large number of plant species are used as feed by the domestic like sheep, goats, cattles, and donkeys (Appendix 1).

Traditionally the people have rotational system of grazing, forage production area and complete reserves, managing the ecosystem operational and productive.

10 Green Pesticides:

Pest control though expensive is inevitable for it hinder health and food production. It is an international problems and approximately one third of the world's agricultural production is consumed annually for pest control (Agrios, 1978; Mc. Even, 1978), causing severe damages to the ecosystem locally and mankind globally. Millions of people exposes to the pesticide toxicity annually causing thousands of deaths and severe health losses to the remaining (Dinham, 1993). It was therefore, imperative to observe and record the traditional bio-technologies and local green pesticides for supplementing the synthetic pesticides on one hand and minimizing the health and economical losses on the other hand.

Orakzai people are still living with simple lives. The people are unaware of the use of synthetic pesticides for agricultural use. People traditionally use some plants for controlling pests. One of the most common green pesticides is a labiate locally known as Sensobyae (*Peroskia artplicifolia*). The rooms cleared with its broom repel the insects specially beats to stay there. The aqueous extract of Darshool (*Chenopodium botrys*) is applied to hairs for killing lice. The latex of Aq Tandoryea (*Calotropis procera*) is considered as topical fungicide and is widely applied against the ring worm's locally. Its latex is applied to the necks of bulls for the regeneration of hairs. The shoots of *Vitex negundo* is locally considered as a strong insecticide. It is placed within the stored grains and successfully avoids store grain insects without causing losses to the stores grain quality. Most of the veterinary pathogens are traditionally treated with local herbs.

Table 1: Key to the plant use description as given in appendix I.

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AT	Agricultural Tools	FN	Fish Poison	S	Spice
B	Beverage	FC	Fishing Check	SA	Snuff Ash
BE	Beeds	FU	Furniture	R	Resin
BR	Broom	GP	Green Pesticide	RS	Root Stock
BA	Bee Attractants	HP	Hedge Plant	SB	Soil Binder
C	Construction	I	Ink	SF	Soil Fertility
CH	Charcoal	IP	Incense/Perfume	SP	Shade Plant
CP	Cash Plant	L	Light	SH	Sticks/Handles
D	Dye	M	Miswak	SR	Soil Reclamation
DF	Dry Fruit	MP	Medicinal Plant	SM	Smoking Medicine
F	Fence	O	Ornamental	T	Timber
FO	Forage	P	Paper	U	Utensil
FP	Fodder Plant	PH	Pot Herb	WB	Wind Break
FS	Fiber Species	PN	Poison	WF	Wild Fruit
FW	Fuel Wood	PR	Packing/Rope	WC	Wood Carving

Discussion

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 co-evolved with human civilization through the experiential use of plants, generation after generation. The people of Manikhel area like most other people would have remained exposed to epidemic, endemic and chronic diseases, besides acute ailments. They would have also experienced variety of fungal, bacterial and viral diseases causing damages to them, their crops and livestock. They were therefore forced to adopt preventive measures of seasonal transhumance on one hand and on the other hand the traditional system of local recipes has been evolved. Centuries of experience of management of natural resources of the people of the area has developed indicators to monitor changes in vegetation/floristic and have thereby changed their habits accordingly. The religious and cultural norms of the area have also contributed much to the health and environment of the area.

Historically the forest resources of the area are distributed among various clans of Orakzai, Manikhel is one of them, are lucky enough who have conserved their forest upto a larger extent. The conservation measures called “BANDANR” and “rotational grazing” employed for the sustainable utilization in traditional ways has proved quite helpful in maintaining the nature intact. The ideal sites for recording the compositions of bio-diversity in the forests are the area near Garoo Toi (995m) and Adidar forests (2400m) on the south and north aspects respectively.

The practices of sustainable utilization of natural resources with the passage of time are diffused in the local culture and are locally respected in emotional and religious zeal. Religious norms in this area have also provided some protection to the local forests of Mehrab Shahi hills are protected due to sacredness of the area where a local Buzarg (saint) had spent a part of his life in this forest. Due to this reason entry into the forest is very limited and it is only exploited for bush foods such as Karkachok (morals), wild fruits, seeds, leaves flowers, rhizomes, honey, and Shishtaryae (mushrooms) etc., but spiritually it is completely banned for its exploitation in the form of bush meat and forest trees. Hence the Mehrab Shahi forest exhibits a best resource of non timber forest products locally.

Besides the religious exercises the traditional cultures has a great influence in maintaining the local ecosystem. For example rangelands observed during this survey have luxuriant growth of grasses which were banned for grazing as well as for forage extraction. Some selected areas are used for grazing and still other for forage production and all of these areas change their position after the declared period of rotation and hence when it becomes necessary, the conservation practices are employed and are then respected and observed sacredly due to the traditional norms. During the survey period it was realized that as BANDANR was employed on cutting Sraf (*Taxus buccata*) and Ghouz (*Juglans regia*) it is observed strictly. For example no one can cut these trees and its rotting wood is also banned for use by the local community. The branches of Sraf can be used only for the construction of roofs of communal places such as Hujras and mosques. Though both the species are the first priority for construction and furniture respectively, but due to the complete ban on walnut trees, it can only be observed in older constructions whereas Yew branches can only be seen in the roofs of Hujras and mosques.

The people are too simple, straightforward and dedicated to their tribal decisions and their committed ness can be realized from a decision when Manikhel sold the Walnuts in their forests for Rs.0.9 million for the extraction of root bark without damaging the trees. The contractor collected Dandasa (root bark) from the roots of wild walnut trees though causing no apparent damage to the trees at that time, but the countless walnut trees felled in the proceeding winter causing damage to other flora as well. The forest is still felled with the rotting wood of walnuts. The local people only take its advantage in the form of mushroom collection growing on it. The dried decaying wood of walnut is still banned for everyone providing recycling base for the forest flora and shelter & food for the forest fauna.

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Appendix 1: Ethnobotanical information regarding the potential species of Mani-khel forests

Sl.#	Botanical Name	Local Name	Family	Folk Uses
1.	<i>Acacia modesta</i> wall	Palosa	Mimosaceae	FW, FP, MP,

				HP, F
2.	<i>Acacia catechu</i> wall	Kikar	Mimosaceae	FW, FP, HP, F
3.	<i>Acer caesium</i> Wall.ex.Brand	Shanda wanyae	Aceraceae	O, FW
4.	<i>Achyranthus aspera</i> L.	Buch Kanda	Amaranthaceae	MP, FP
5.	<i>Albezia lebbeck</i> (L) Benth	Srekh	Mimosaceae	FW, FP
6.	<i>Adhatoda vasica</i> Nees.	Bezuya	Acanthaceae	FW, MP
7.	<i>Adiantum cappillus</i> veneris L.	Bar sumbal	Adiantaceae	MP, SP, U
8.	<i>A. incisum</i> Forsk	Barsumbal	Adiantaceae	MP, SB
9.	<i>A. venustum</i> D. Don	Bbozayae	Adaintaceae	MP, SB
10.	<i>Agaris campestris</i> L.	Kholkae	Acgaricaceae	PN, S, R
11.	<i>Ailanthus altissima</i> (Mill.) Swingle	Asli shandai	Simarubaceae	FW, FP, SB, WB, FU, F
12.	<i>Ajuga bracteosa</i> Wall. Ex. Benth	Soor Boutai	Lmiaceae	MP,
13.	<i>A. parviflora</i> Beth	Tarkha booti	Lamiaceae	MP, FN,
14.	<i>Allium ascalonium</i> L.	Piazakae	Alliaceae	MP,S
15.	<i>Aloe vera</i> Mill	Zahar boutyae	Liliaceae	MP
16.	<i>Onosoma</i> sp.	Ratan Jok	Boraginaceae	MP
17.	<i>Amaranthus caudatus</i> L.	Chalwai	Amaranthaceae	PH, FP, FO
18.	<i>Anethum sowa</i> Roxb. Ex. Flem	Sawah	Umbeliferaceae	MP
19.	<i>Anthoroxan pronodes</i> Steud.	Gaya	Poaceae	FP, FO
20.	<i>Arisema utile</i> Hook.fex.Schott	Kukar mar	Araceae	MP, PN
21.	<i>A. tortuosum</i>	Kukar mar	Araceae	MP, PN
22.	<i>Artimisia miritima</i> L.	Tarkha	Astraceae	MP, PN, GP, SB
23.	<i>A. scopania</i> L.	Jaokae	Astraceae	MP, GP, BR, FW
24.	<i>Aristida adscensionis</i>	Mashkar	Poaceae	FP, FO, BR
25.	<i>Asparagus adscendens</i>	Thindorae	Liliaceae	M, MP
26.	<i>Astragalus</i> <i>anisacanthus</i>	Mamol	Liliaceae	MP, M
27.	<i>A. phyrrotrichus</i>	Mamol	Liliaceae	MP, M

	Boiss.			
28.	<i>A. psilocentros</i> Fisch	-	Liliaceae	MP, M
29.	<i>Atropa accuminata</i> Royle ex. Lindl.	Barkak	Solanaceae	MP, PN
30.	<i>Avena Fatua</i> L.	Jamdarae	Poaceae	FP, FO
31.	<i>Bauhinia varriegata</i>	Karyal	Caesalpinaceae	PH, FW, SP, FU
32.	<i>Berberis vulgaris</i>	Zark	Berberidaceae	MP, F, FW
33.	<i>Berberis lycium</i>	Zark azghayae	Berberidaceae	MP, F, FW
34.	<i>Berginia ciliata</i> (Haw) Scernb.	Gat panra	Saxifragaceae	MP, O
35.	<i>Brumus japonicus</i> Thum ex. Murr	Jaokae	Paceae	FP, FO
36.	<i>Buxus wallichiana</i> Baill.	Shamshad	Buxaceae	MP, FW, U
37.	<i>Calendula arvensis</i> L.	Ziar Gulae	Astraceae	MP
38.	<i>Calendula officinalis</i> L.	Ziar Gulae	Astraceae	MP
39.	<i>Calotropis procera</i> (Wild) R.Br.	Ak Thandorayae	Aecelpediaceae	MP, PN
40.	<i>Cannabis sativa</i> L.	Bang	Cannabidaceae	MP, SH, FS
41.	<i>Capsella</i> <i>bursa-pastoris</i> (L.) Medik	Bambesa	Brassicaceae	FP, MP
42.	<i>Carrisa ophaca</i>	Khkar Mewa	Carricaceae	WF, FP, FW, HP, F
43.	<i>Carthamus oxycantha</i> L.	Kareza	Astaraceae	MP
44.	<i>Celtis australis</i> L.	Tagha	Ulmaceae	MP, AT, FU, SP
45.	<i>Celtis leavigata</i> Wild.	-	Ulmaceae	WF,U
46.	<i>Chrysopogon aucheri</i>	Spin wakha	Poaceae	FP, FO, PR
47.	<i>Chrysopogon</i> <i>montanus</i> Trin.	Spin wakha	Poaceae	FP, FO, PR
48.	<i>Chinopodium album</i> L.	Sarmae	Chenopodiaceae	PH, MP, FP
49.	<i>Chenopodium botrys</i> L. (Trev) Vis.	Darshool	Chenopodiaceae	MP
50.	<i>Cenchrus</i> <i>pennisetiformis</i>	Pisho Lamyae	Poaceae	FP, FO

	(Hoechest) Stued			
51.	<i>Cenchrus ciliaris</i>	Pisho Lamyae	Poaceae	FP, FO
52.	<i>Cichorium intybus</i> L.	Shin guluk	Astraceae	PH, MP
53.	<i>Clematis orientalis</i> L.	Zelai	Ranunculaceae	MP
54.	<i>Corydalis stewartii</i> Fedde	Mamera	Papveraceae	MP
55.	<i>Cotoneaster affinis</i> (Lindl.) Schn	Kharawa	Rosaceae	MP,FW
56.	<i>Cotoneaster microphylla</i> Wall.	Kharawa	Rosaceae	MP, FW, WF
57.	<i>Cotoneaster numularia</i> Fisah Mey.	Mamanra	Rosaceae	MP, FW
58.	<i>Cotinus coggyria</i> Scop.	Miswakae	Anacardiaceae	MP, FW, SB
59.	<i>Crataegus oxycantha</i> HK. F	Ghwanza	Rosaceae	MP, FW, F
60.	<i>Cuscuta reflexa</i> Roxb.	Nela Danai	Convolvulaceae	GP, FP
61.	<i>Cynodon dactylon</i>	Kabal	Poaceae	FP, FO, O
62.	<i>Dicliptera blupiroides</i> Nees.	Oodi gulae	Acanthaceae	FP, FO
63.	<i>Dalbergia sissoo</i> Roxb.	Shawa	Papilionaceae	FW, R, C, U, FU
64.	<i>Daphne papaveraceae</i>	Leghonae	Thymeleaceae	MP, FW
65.	<i>Datura stramonium</i> L.	Tura	Solanaceae	MP
66.	<i>Datura metal</i>	Tura	Solanaceae	MP
67.	<i>Desmostachya bipinnata</i> (L.) Stapf.	Drab	Poaceae	FP, FO
68.	<i>Diospyrus lotus</i>	Amlok	Ebenaceae	FW, AT, SP, F, FU
69.	<i>Dodonia viscosa</i> (L>) Jacq	Ghwarawonyae	Sapindaceae	FW, PR, F
70.	<i>Elaeguns umbellata</i> Thumb	Ghanamranga	Elegnaceae	WF, FW, MP, F, HP
71.	<i>Euphorbia hirta</i>	-	Euphorbiaceae	MP
72.	<i>Euphorbia prostata</i>	Warmaga	Euphorbiaceae	MP
73.	<i>Ficus glomerata</i>	Urmal	Moraceae	WF
74.	<i>Ficus palmata</i>	Inzar	Moraceae	WF, FP, FW
75.	<i>Fragaria indica</i> Andrews	Tha Bouti Manzakha	Rosaceae	MP, WF
76.	<i>Fragaria nubicola</i>	Tha Bouti	Rosaceae	WF, MP

	Lindl.	Manzakha		
77.	<i>Fraxinus excursior</i> L.	Khang	Oleaceae	FP, WF, HP
78.	<i>Fumaria indica</i> (Haussk) Pugsly.	Papra	Papaveraceae	MP, FP, FO
79.	<i>Grewia optiva</i> Drum Ex. Burret	Pastha Wanyae	Tiliaceae	FP, WF, FW, C, F
80.	<i>Gymnosporia spinosa</i> (Forsk.) Fiori (Syn G. royleana Wall)	Gandjareyae	Celastraceae	HP, FW, FS
81.	<i>Hedra hilex</i> L.	Prewatyae	Araliaceae	FP, MP
82.	<i>Hypericum perforatum</i> L.	Shin chai	Guttiferaceae	B, MP
83.	<i>Impatiens brachycentra</i> Kar & ker	Thor lakayae	Balsaminaceae	FP, MP, D
84.	<i>Impatiens edgeworthii</i> Hook	Thor lakayae	Balsaminaceae	D, FP, MP
85.	<i>Impatiens flemingi</i>	Thor lakayae	Balsaminaceae	D, FP, MP, WF
86.	<i>Indigofera weithii</i>	Ghwareja	Papiolionaceae	FP
87.	<i>Jasminium humile.</i>	Prewatyae	Oleaceae	FW, D, O, IP
88.	<i>Jasminum officinale</i>	Prewatyae	Oleaceae	FW, D, O, IP
89.	<i>Juglans regia</i> L.	Ghouz	Juglandaceae	WF, FP, MP, FS, AT, SP, S, O, DF, M, SM
90.	<i>Malva neglecta</i> Wallr.	Panerak	Malvaceae	FP, PH, FO
91.	<i>Malva sylvestris</i>	Panerak.	Malvaceae	FP, PH, FO, MP
92.	<i>Matricaria chmomilla</i> L.		Astraceae	MP
93.	<i>Mallotus philippensis</i> Muell Arg.	Kambela	Euphorbiaceae	FP, MP, FW, SP, FU
94.	<i>Malvastrum coramondilianum</i>	Gaya	Malvaceae	MP, FW, FP D
95.	<i>Melia azedarech</i> L.	Draka.	Meliaceae	F, MP, FW, SP, FU
96.	<i>Mentha longifolia</i>		Lamiaceae	MP
97.	<i>Mentha spicata</i>	Nanalyea.	Lamiaceae	B, MP, S
98.	<i>Mentha sylvestris</i>	Nanalyea.	Lamiaceae	B, MP, S
99.	<i>Micromeria biflora</i>	Narey	Lamiaceae	MP, BA

	(Ham) Bth.	Shamakey.		
100.	<i>Morus alba L.</i>	Baidanaa.	Moraceae	WF, FP, MP, FW, AT, WB, SP, F, FU
101.	<i>Morus nigra</i>	Thoot.	Moraceae	WF, MP, FP, FW, AT, FO, F, FU
102.	<i>Myrsine africana</i>	Maraghoneyea.	Myrsinaceae	MP, FW, C
103.	<i>Nanorrhophs ritchiana H. Wendl.</i>	Mazaryae	Palmaceae	WP, PR, FU, BR, U
104.	<i>Nasturtium officinale</i> R.Br.	Sharyea.	Brassicaceae	PH, FP, MP
105.	<i>Nasturtium microphyllum</i> Boen.ex.Reichb.	Sharyea.	Brassicaceae	PH, FP, MP
106.	<i>Olea ferruginea</i> Royle	Khona.	Oleaceae	WF, FP, FW, AT, SP, C
107.	<i>Onopordeum acanthium L.</i>	Wrejakai.	Asteraceae	FP, MP
108.	<i>Origanum vulgase L.</i>	Shamakai.	Lamiaceae	MP, C
109.	<i>Oxalis corniculata L.</i>	Manzakin Tarokey.	Linaceae	FP, S, IP
110.	<i>Parrotiopsis jacquemontiana</i> (Done) Rehder.	Pechoo	Hamamelidaceae	FW, PR, SH, C
111.	<i>Peroskia artiplicifolia</i> Benthg	Sensobyae	Lbiataeae	GB, MP, BR
112.	<i>Phragmites communis</i> Trin	Sharghashyae	Poaceae	U
113.	<i>Pimpinella diversifolia</i> (Wall) DC	Desi Zankai	Pinaceae	MP, S, FU
114.	<i>Pinus roxberghii</i>	Nakhtar	Pinaceae	FW, WF, L, SB, O, T, R, F
115.	<i>Pinus wallichiana</i>	Nakhtar	Pinaceae	FW, L, SB, O, T, R, F
116.	<i>Pistacia integerrima</i> Stewart	Shnai	Pistaciaceae	FP, MP, FW, F
117.	<i>Pistacia khinjik</i>	Shnai	Pistaciaceae	WF, F, FW, FP
118.	<i>Phytolacca lathenia</i> (Mog) Walt.	Tamakoo saag	Phytolocaceae	PH, MP, D, I

119.	<i>Plantigo lanceolata</i> L.	Jabbai	Plantaginaceae	MP, FP
120.	<i>Plantigo major</i> L.	Chawayo Jabai	Plantaginaceae	MP, FP
121.	<i>Plectranthus ramosus</i>	Spina baiza	Lamiaceae	MP, FP, BA
122.	<i>Polygonum amplexicaul</i>	-	Latiaceae	
123.	<i>Polygonatum verticillatum</i> All	Nooi Alam	Latiaceae	MP, FP
124.	<i>Podophyllum emodi</i> Wall.	Soor Marchakai	Podophyllaceae	MP
125.	<i>Polygonum aviculare</i>	Palpolak	Polygonaceae	MP, FN
126.	<i>Prangos pobularia</i> Lindl.	Kamasla Zankai	Umbilifereae	MP
127.	<i>Portulaca oleraceae</i> L.	Warkharai	Portulacaceae	PH, MP
128.	<i>Prunus cornuta</i>	Nangawar	Rosaceae	FW, F, DF
129.	<i>Punica granatum</i>	Anangorae	Punicaceae	WF, FW, F
130.	<i>Pteridium equilinum</i> (L) Kuhn.	Kwanae	Dennstaediaceae	PH, CP
131.	<i>Pyrus pashia</i>	Tanga	Rosaceae	RS
132.	<i>Quercus ilex</i>	Khara serai	Fagaceae	FW, F, CH, C
133.	<i>Quercus dilatata</i> Lindl.	Ghwara serai	Fagaceae	WF, FP, FW, F, CH, C
134.	<i>Ranunculus muricatus</i>	Quazi ban	Rununculaceae	MP, FP
135.	<i>Ricinus communis</i>	Asila harhanda	Euphorbiaceae	FW, SB, F, HP
136.	<i>Robinia pseudocacia</i> L.	Kikar	Papilionaceae	FP, FW, F, HP
137.	<i>Rosa brunonii</i> Lindl (Syn. <i>R. moschata</i> J. Herrm)	Thandorayae	Rosaceae	HP, FC
138.	<i>Rubus fruticosus</i>	Karwara	Rosaceae	WF, MP, F, FU
139.	<i>Rubus sanctus</i>	Largai manzakha	Rosaceae	WF, MP, F
140.	<i>Rumex acetosa</i> L.	Tarokai	Polygonaceae	PH, MP
141.	<i>Rumex dentatus</i>	Shlkhi	Polygonaceae	PH, MP
142.	<i>Rumex nepalensis</i>	Zanda	Polygonaceae	PH, MP
143.	<i>Sacchrum monja</i> Roxb.	Nal	Poaceae	SB, HP, U
144.	<i>Sacchrum spontaneum</i> L.	Sharghashae	Poaceae	SB, U
145.	<i>Salix babylonica</i> L.	Asila wala	Salicaceae	SB, SP, FP, FW
146.	<i>Salvia lanata</i> Roxb	-	Lamiaceae	MP
147.	<i>Salvia mubicala</i>	-	Lamiaceae	MP

148.	<i>Sarcococca saligna</i>	Ladanr	Buxaceae	MP, FW
149.	<i>Sedum ewersii</i> Ledeb.	The Gat warkharae	Crasulaceae	MP
150.	<i>Solanum nigrum</i> L.	Tore ninae	Solanaceae	PH, MP
151.	<i>Solanum xanthocarpum</i> (Schard & Wendl.)	Mara ghoonae	Solanaceae	MP
152.	<i>Soncus asper</i> L.	Shawda pai	Leguminaceae	FP
153.	<i>Sorghum helepense</i> (L.) Pers.	Dadam	Rosaceae	FP, FO
154.	<i>Stychus parviflora</i> Benth	Sper bootae	Labiataceae	MP, FW
155.	<i>Taraxucyn officinale</i> Weber.	Ziar gwalae	Tamaricaceae	MP
156.	<i>Taxus buccata</i> L.	Srap	Taxaceae	FP, FW, AT, C
157.	<i>Tecoma crucigera</i> (L.) Bureau	Lowar	Begnonicaceae	FW, O
158.	<i>Thalictrum faleoneri</i>	Mamera	Combritaceae	MP
159.	<i>Thalictrum minus</i>	Mamera	Combritaceae	MP
160.	<i>Thymus helepens</i>	Pannay/Mray		MP
161.	<i>Tribulus terrestris</i> L.	Markoondai	Zygophyllaceae	MP
162.	<i>Utrica dioca</i> L.	Lewane seznak	Utricaceae	PH, MP
163.	<i>Utrica pilulefora</i> L.	Sezoonkai	Utricaceae	MP
164.	<i>Valeriana jatamansi</i> Jones	Makhkak	Velerianaceae	MP
165.	<i>Varbascum thapsus</i> L.	Khar dag	Scrophulariaceae	MP
166.	<i>Veronica ciburia</i> (L.) Less	Shamakae	Scrophulariaceae	MP
167.	<i>Viburnum cotinifolium</i> Wall ex.D.Don	Ghamzewa	Caprifoliaceae	WF, MP, F, HP
168.	<i>Viola serpens</i> Wall	Banafsha	Violaceae	MP, PH
169.	<i>Vitex negundo</i> L.	Marwandai	Verbenaceae	MP, GP
170.	<i>Withania sommifera</i> Dunal	-	Solanaceae	MP, PN
171.	<i>Xanthium strumarium</i> L.	Gishkae	Asteraceae	MP, FW
172.	<i>Zizypus jujuba</i> Lam	Bera	Rhamnaceae	WF, HP, FW, AT