

## Traditional and local plant use in Lower Tanawal, Pakistan

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The inhabitants of Lower Tanawal, Pakistan, depend on plants for various purposes. The indigenous knowledge and traditional uses of plants in the area are threatening fast. Therefore, we intended to document the native uses of various plants of Lower Tanawal, Abbottabad, Pakistan. We recorded information about different medicinal plants, fodder species, fuelwood species, vegetable, and fruit yielding plants.

**Keywords:** Lower Tanawal; Local uses; plants

### Introduction

Ethnobotany can be summarized in four words, i.e., people, plant, interaction, and uses (Hazard et al., 2007). Medicinal plants have a strong connection with human health. Medicinal plants play an essential role in rural areas because they are used as remedies for different ailments (Qureshi and Ghufuran, 2005). The increasing use of traditional treatments demands more systematically the principles behind medicines' usefulness (Patwardhan et al. 2005). Herbal medicine is still the backbone of the world population, mainly in developing countries, for health care (Kamraj, 2000). In this regard, forests represent an essential resource for local people who gather and sell these medicinal plants for livelihood (Seth 2003; Adnan and Holscher, 2011). The prehistoric record of plant species used by humans shows their importance in the economy, shelter, food, and health. Fodder is a significant source of food for livestock (Panday, 1982). Traditional and scientific knowledge improves the selection of valuable fodder plants (Nunes, 2015). Fuelwood is the key source of energy. The people use fuelwood for cooking and heating purposes in winter. The fence is a freestanding structure that is made to prevent the movement of livestock and wild animals across an edge to protect agricultural fields (Bhattarai et al., 2005). There are numeral plant species that are used as vegetables. This is also an old practice of inhabitants that they cultivate vegetables for their use.

### Material and Method

Lower Tanawal is located in District Abbottabad Khyber–Pakhtunkhwa province (Adeela et al., 2019) and occupies the Mansehra basin's intervening area in the north and the south Haripur basin. Lower Tanawal is a component of many villages almost adjoining each other.

The present study was based on the extensive field surveys made to different Lower Tanawal Abbottabad villages, Pakistan, during different seasons of 2016–2018. The equipment used through the field study was a Nikon A-100 camera, stem Cutter, trowel, newspaper, plant presser, and polythene bags. Data was documented in the notebook and plants specimen was tagged. Specimens of each plant species were collected, dried, and fixed on herbarium sheets. The plant specimens were identified with the help of the Flora of Pakistan (Nasir & Ali 1970-1989).

Surveys were done in various villages of Lower Tanawal. From each village, knowledgeable persons were interviewed. During the surveys, participatory interview tools, including group discussions, informal meetings, surveys, and field observations, were used for primary data collection. The informants included men, women, youths, and elders. Most of them were dependent on agriculture for their livelihood. Prior consent for the documentation of information provided by informants was obtained verbally from each of them before the interview was taken. During the meeting, questions on medicinal plants, their parts used, and mode of utilization were asked to the villagers. The participants provided information on the medicinal plants, their parts used, fodder species, fuelwood species, vegetable, and fruit yielding plants (Table 1 and table 2).

**Table 1.** List of medicinal plants and their use.

Botanical name	Life form	Family	Medicinal use
<i>Acacia modesta</i> Wall.	Tree	Fabaceae	They are used against back pain.
<i>Acacia nilotica</i> (L.)Delile	Tree	Fabaceae	The roots are used against cancer. Antibacterial, Astringent, liver tonic,
<i>Achyranthes aspera</i> L.	Herb	Amaranthaceae	The root is a diuretic. It is used for the treatment of rheumatism, stomach problems, cholera, and

<i>Adiantum capillus –veneris</i> L.	Herb	Pteridaceae	skin diseases. The fresh or dried leaves are used for antidandruff.
<i>Aesculus indica</i> (Wall. ex Cambess.) Hook.	Tree	Sapindaceae	Seed oil is applied externally in the treatment of skin disease.
<i>Ajuga bracteosa</i> Wall. ex Benth.	Herb	Lamiaceae	The juice of the leaves is used as a blood purifier and also used for burns & boils.
<i>Albizia lebbbeck</i> (L.) Benth.	Tree	Fabaceae	The leaves and seeds are used in the treatment of eye problems.
<i>Amaranthus viridis</i> L.	Herb	Amaranthaceae	Leaves are cooked and eaten by the people for urinary disease.
<i>Anagallis arvensis</i> L.	Herb	Primulaceae	The whole herb is a diuretic expectorant. It is used in the treatment of skin infections and disorders of the liver.
<i>Arisaema flavum</i> (Forsskal) Schott	Herb	Araceae	Juice of the rhizome is applied against snakebite and scorpion sting.
<i>Artemisia absinthium</i> L.	Herb	Asteraceae	antimalarial, anthelmintic, antipyretic,
<i>Artemisia scoparia</i> Waldst. & Kitam.	Herb	Asteraceae	It is used in the treatment of jaundice, hepatitis.
<i>Bauhinia variegata</i> L.	Tree	Fabaceae	The juice of the flowers is used for the treatment of diarrhea. The root is used as an antidote to the snake poison.
<i>Berberis lyceum</i> Royle	Shrub	Berberidaceae	The plant is proved efficient in healing wounds.
<i>Biden pilosa</i> L.	Herb	Asteraceae	The whole plant is anti-rheumatic. It is also used to treat intestinal ailments.
<i>Boerhavia diffusa</i> L.	Herb	Nyctaginaceae	It is used in the treatment of gastric disturbances, asthma, and jaundice.
<i>Cannabis sativa</i> L.	Herb	Cannabaceae	The whole plant is anthelmintic, antiemetic, anti-inflammatory.
<i>Cedrela serrata</i> Royle	Tree	Meliaceae	Leaves are used for digestive problems,
<i>Carthamus oxycantha</i> Bieb.	Herb	Asteraceae	seeds are used for dressing ulcer and against itch
<i>Chenopodium ambrosioides</i> L.	Herb	Chenopodiaceae	Juice of leaf is used for fever, specifically for malarial fever
<i>Chenopodium album</i> L.	Herb	Chenopodiaceae	This plant is used as snake repellent because of its root and fruit, which are known as an antidote to snake poison
<i>Convolvulus arvensis</i> L.	Herb	Convolvulaceae	Beneficial in blood diseases.
<i>Cichorium intybus</i> L.	Herb	Asteraceae	Leaves are used in hepatic complaints.
<i>Conyza canadensis</i> L.	Herb	Asteraceae	The herb is used to cure dysentery, diarrhea.
<i>Daphne mucronata</i> Royle	Shrub	Thymelaeaceae	Leaves of this plant are used as purgative
<i>Delbergia sisso</i> Roxb	Tree	Fabaceae	The leaves are used to treat wounds. Leaf extracts are anti-inflammatory.
<i>Diospyros lotus</i> L.	Tree	Ebenaceae	The fruit is febrifuge
<i>Dodonaea viscosa</i> (L) Jacq.	Shrub	Sapindaceae	Water extracts of leaves are used as anthelmintic
<i>Eriobotrya japonica</i> (Thunb.)Lindl	Tree	Rosaceae	The leaves of the plant are analgesic, antibacterial.
<i>Euphorbia hirta</i> L.	Herb	Euphorbiaceae	Seeds of these plants are used for the treatment of diarrhea.
<i>Ficus benghalensis</i> L.	Tree	Moraceae	The leaves of the plant are used to remedy dysentery and diarrhea
<i>Ficus recemosa</i> L.	Tree	Moraceae	The leaves of the plants are used in the treatment of diarrhea
<i>Fumaria indica</i> (Hauskn.) Pugsley	Herb	Fumariaceae	Used as a blood purifier and for pimples
<i>Galium aparine</i> L.	Herb	Rubiaceae	The whole plant is used for diuretic and urinary tract problems.
<i>Hypericum perforatum</i> L.	Shrub	Hypericaceae	Antiviral, wound healing,
<i>Juglans regia</i> L.	Tree	Juglandaceae	The fruit is edible.
<i>Justicia adhatoda</i> L.	Shrub	Acanthaceae	Leaves of these plants are used for cough.
<i>Lactuca serriola</i> L.	Herb	Asteraceae	The plant is used for roundworms and also used for removing threadworms from the small intestine.
<i>Melia azedarach</i> L.	Tree	Meliaceae	leaf juice is anthelmintic and diuretic. The leaves are used to treat skin
<i>Mentha arvensis</i> L.	Herb	Lamiaceae	The whole plant is an aesthetic, aromatic, carminative.
<i>Menthe longifolia</i> (L)Huds.	Herb	Lamiaceae	Antiseptic, carminative
<i>Micromeria biflora</i> (Buch.-Ham. ex D.Don) Benth.	Herb	Lamiaceae	A paste of the root is used to treat the toothache
<i>Mirabilis jalapa</i> L.	Herb	Nyctaginaceae	Root is diuretic and purgative

<i>Morus alba</i> L.	Tree	Moraceae	The leaves are antibacterial, astringent. They are taken internally in the treatment of colds, influenza.
<i>Morus nigra</i> L.	Tree	Moraceae	The leaves are antibacterial, astringent, diaphoretic.
<i>Oxalis corniculata</i> L.	Herb	Oxalidaceae	Leaves are applied as a poultice to the skin during inflammation.
<i>Otostegia limbata</i> (Bth.) Boiss	Shrub	Lamiaceae	Fresh leaves are applied to gums, and extract of leaves is used in ophthalmic.
<i>Pistacia integerrima</i> J.L.Stewart.ex.Brands.	Tree	Anacardiaceae	Fruits of this plant are used against liver disorders
<i>Plantago lanceolata</i> L.	Herb	Plantaginaceae	Leaves are astringent
<i>Polygonum plebeium</i> R.Br.	Herb	polygonaceae	The seeds are cooked and eaten as a remedy for bowel complaints
<i>Prunus persica</i> (L).Batsch.	Tree	Rosaceae	The leaves are astringent, demulcent, diuretic, expectorant, laxative. They are used internally in the treatment of gastritis, cough.
<i>Punica granatum</i> L.	Tree	Punicaceae	The flowers are used in the treatment of dysentery, stomach ache, and cough. The fruit is a mild astringent and refrigerant in some fevers.
<i>Pyrus pashia</i> Buch.-Ham. ex D.Don	Tree	Rosaceae	The juice of the ripe fruit is used in the treatment of diarrhea
<i>Ricinus communis</i> L.	Tree	Euphorbiaceae	the seed is anthelmintic, cathartic, emollient, laxative, purgative[
<i>Rosa moschata</i> (Herrm)	Shrub	Rosaceae	The plant is said to be beneficial in the treatment of burning of the skin and eye diseases
<i>Rubus fruticosus</i> L.	Shrub	Rosaceae	Root and leaves are strongly astringent, depurative, diuretic.
<i>Rumex dentatus</i> L.	Herb	Polygonaceae	The root is used as an astringent.
<i>Rumex hastatus</i> D.Don	Herb	Polygonaceae	The leaves are applied on cuts for their astringent properties.
<i>Silene conoidea</i> L.	Herb	Caryophyllaceae	The juice of the plant is used in the treatment of ophthalmia
<i>Salvia moorcroftiana</i> Wallich ex Benth.	Herb	Lamiaceae	Rhizomes are crushed and mixed with wheat flour and given to buffalos to increase milk
<i>Saussurea heteromalla</i> D.Don	Herb	Asteraceae	Seeds are known as carminative, used as a tonic for horses and other animals.
<i>Sisymbrium irio</i> L.	Herb	Brassicaceae	Leaves are used for throat and chest infections
<i>Stellaria media</i> (L)Vill.	Herb	Caryophyllaceae	Plant is carminative, diuretic, and expectorant.
<i>Taraxacum officinale</i> Weber	Herb	Asteraceae	The leaves are cooked and eaten to release constipation and also to purify the blood.
<i>Trifolium repen</i> L.	Herb	Fabaceae	The plant is anti-rheumatic, depurative.
<i>Trichodesma indicum</i> L.	Herb	Boraginaceae	Leaves are effective against snakebite; the plant is diuretic and used in urinary diseases
<i>Vitex negundo</i> L.	Shrub	Verbenaceae	The leaves are useful in dispersing swellings of the joints from acute rheumatism.
<i>Verbascum Thapsus</i> L.	Herb	Scrophulariaceae	The leaves are warm and then tied to the joints to relieve the pain and soften the boils.
<i>Woodfordia fruticosa</i> ( L.)Kurz.	Shrub	Lythraceae	The flowers are used in the treatment of dysentery.
<i>Xanthium strumarium</i> L.	Shrub	Asteraceae	They are used internally in the treatment of allergic rhinitis, rheumatism.
<i>Zanthoxylum armatum</i> Dc.	Shrub	Rutaceae	The seeds and the bark are stomachic. The fruits, branches are carminative.

**Table 2.** Non-medical plant species.

Botanical name	Life form	Family	Use
<i>Rubus fruticosus</i> L.	Shrub	Rosaceae	Fodder species/Fencing
<i>Convolvulus arvensis</i> L	Herb	Convolvulaceae	Fodder species/Vegetable uses
<i>Olea ferruginea</i> Royle.	Tree	Oleaceae	Fodder species/Fuel wood/ sheltering
<i>Cynodon dactylon</i> (L.)Pers.	Herb	Poaceae	Fodder species
<i>Melia azedarach</i> L.	Tree	Meliaceae	Fodder species/Fuelwood
<i>Morus alba</i> L.	Tree	Moraceae	Fodder species/Fuelwood/Fruit yielding

<i>Morus nigra</i> L.	Tree	Moraceae	Fodder species/Fuelwood/Fruit yielding
<i>Berberis lyceum</i> Royle	Shrub	Berberidaceae	Fodder species/Fencing.
<i>Grewia optiva</i> J.R. Drumm. ex Burre	Tree	Tiliaceae	Fodder species
<i>Rubus ellipticus</i> Sm.	Shrub	Rosaceae	Fodder species/Fencing.
<i>Pinus roxburghii</i> Sarg.	Tree	Pinaceae	Fuelwood/Sheltering
<i>Dodonaea viscosa</i> (L.) Jacq.	Shrub	Sapindaceae	Fuelwood/Sheltering
<i>Quercus incana</i> Bartram	Tree	Fagaceae	Fuelwood
<i>Pyrus pashia</i> ,	Tree	Rosaceae	Fuelwood
<i>Punica granatum</i> L.	Tree	Punicaceae	Fuelwood/Fruit yielding
<i>Bauhinia variegata</i> L.	Tree	Fabaceae	Fuelwood/Vegetable uses
<i>Chenopodium album</i> L.	Herb	Chenopodiaceae	Vegetable use
<i>Rumex dentatus</i> L.	Herb	Polygonaceae	Vegetable use
<i>Rumex hastatus</i> D.Don.	Herb	Polygonaceae	Vegetable use
<i>Amaranthus viridis</i> L.	Herb	Amaranthaceae	Vegetable use
<i>Solanum nigrum</i> L.	Herb	Solanaceae	Vegetable use
<i>Aesculus indica</i> (Wall.Ex Cambess.) Hook	Tree	Sapindaceae	Veterinary use
<i>Prunus amricana</i> Marsh	Tree	Rosaceae	Fruit yielding
<i>Juglan regia</i> L.	Tree	Juglandaceae	Fruit yielding
<i>Prunus persica</i> (L.)Batsch.	Tree	Rosaceae	Fruit yielding
<i>Pyrus pyrifolia</i> (Burm.)Nak.	Tree	Rosaceae	Fruit yielding
<i>Pyrus communis</i> L.	Tree	Rosaceae	Fruit yielding
<i>Diospyros lotus</i> L.	Tree	Ebenaceae	Fruit yielding
<i>Acacia modesta</i> Wall.	Tree	Fabaceae	Fencing.
<i>Gymnosporia royleana</i> Wall. ex M.A.Lawson	Shrub	Celastraceae	Fencing.
<i>Rosa moschata</i> Herrm.	Shrub	Rosaceae	Fencing.

## Results and Discussion

The study area results indicated that 71 medicinal plants distributed in 36 families represent 20 trees, twelve shrubs, and 39 herbs were reported from different localities of Lower Tanawal, Pakistan. We observed that leaves of twenty-seven taxa, seeds of seven taxa, roots of ten taxa, fruits of seven taxa, flowers of two plants, gum of two taxa, rhizome of two taxa, and whole plant of seventeen taxa were used for different remedies and disorders. The present study provides detailed information on the traditional practices of medicinal plants. The older people of Lower Tanawal, Pakistan, have more awareness regarding these plants which were collected for their uses. Mostly, the area plants were commonly used against different diseases viz. hepatitis, diabetes, skin problems, fever, nausea, cuts and wounds, vomiting, piles, asthma, typhoid, jaundice, kidney and bladder stones, dysentery, diarrhea, and various other diseases.

The same results agree with the ethnobotanical study from Kohistan valley, Khyber Pakhtunkhwa (Jan *et al.*, 2010), an ethnobotanical study from Tehsil Kabal, Swat District, Khyber Pakhtunkhwa (Ahmad *et al.*, 2011), and ethnobotanical review from Neelum Valley, Azad Jammu & Kashmir (Mahmood *et al.*, 2011). Indigenous knowledge and use of medicinal plants by the tribal communities of Malakand District, Khyber Pakhtunkhwa, Pakistan (Murad *et al.*, 2011), the ethnobotany of Chitral Valley, Khyber Pakhtunkhwa, Pakistan (Ali and Qaiser, 2009).

It was revealed that 31 plant species belonging to 20 families represent 18 trees, six shrubs, and seven herbs used for other purposes. In this connection, ten species belonging to 8 families, in which five tree species – three shrubs and two herbs are used for fodder purposes. Similarly, ten species belonging to 9 families, in which nine trees and one shrub are used as fuelwood species. Further, seven species belonging to 6 families in which six herbs, one tree is used as vegetable species, nine tree species belonging to 5 families used as fruit yielding trees. Also, six plant species are used for fencing and three species for sheltering in different localities of Lower Tanawal, Pakistan.

Our results are agreed with Barakatullah *et al.* (2009), who documented 18 fodder species from Charkotli Hills, District Batkhela, and reported that *Cynodon dactylon* and *Acacia modesta* as fodder species. Similar findings were reported by Sher *et al.* (2011), who stated 66 fodder species from Chagharzai Valley, District Buner, Pakistan. Deka *et al.* (2007) documented ten native fuelwood species. The leaves of wild plants are used as a vegetable like *Chenopodium album*, *Amaranthus viridis*. These are known as saag in the local language. Our results are similar to Sher *et al.* (2011), who documented 36 vegetable species. Peoples of the study area use *Aesculus indica* (in a local language called Bankhor) for cattle diseases. Our results are agreed with Yousifzai *et al.* (2010). Different plants are used for fruits in the study area. Our findings are in line with Ibrar *et al.* (2007), who reported 18 fruit plant species from Ranyal Hill, Shangla. Plant species with bush and spines are used for fencing. Our findings are agreed with Durrani *et al.* (2009), Sher and Al-Yemni (2011).

Due to overexploitation and habitat degradation, the population of the most important species is decreasing fast. Due to the overexploitation of roots, seeds, fruits, flowers, and barks of most of the species in Lower Tanawal may lead to their early disappearance.

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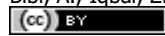
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