Ethnobotanical Studies on Herbs and Shrubs of Tehsil Taunsa Sharif, District Dera Ghazi Khan, Punjab, Pakistan

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ABSTRACT

The present study aimed to document the traditional uses of the herbs and shrubs of Tehsil Taunsa Sharif, District Dera Ghazi Khan. The ethnobotanical significance and biodiversity conservation potential of the region was also found out. The area's ecological diversity, ranging from semi-arid plains to hilly terrains, supports a rich variety of flora long used by local communities to treat various ailments. Ethnobotanical data was gathered through interviews of the local inhabitants and herbal healers. The field surveys were carried out to collect the herbs and shrubs of the study area, followed by their identification, documentation using flora of Pakistan. A total of 60 plant species were identified, with *Withania somnifera*, *Peganum harmala*, and *Suaeda fruticosa* among the most commonly used medicinal plants. The Poaceae family was the most represented, comprising seven species and showing the highest Fidelity Level (FL) and Use Value (UV). These plants are crucial for rural primary healthcare, especially where modern facilities are scarce. Beyond their medicinal uses, these species play key ecological roles—preventing soil erosion, supporting pollinators, enhancing biodiversity, and regulating climate. The study underscores the urgent need to conserve both biological and cultural heritage. Preserving traditional knowledge and integrating it with modern pharmacological research could drive drug discovery and sustainable innovation. This research forms a baseline for future ecological and bio cultural conservation efforts in the region.

Keywords: Ethnobotany, Taunsa Sharif, medicinal plants, ecological diversity, traditional knowledge, ecosystem function, conservation

Introduction

Ethnobotanical studies involve the scientific study of the relationships between people and plants, focusing on how different cultures use, manage, and perceive plants for purposes such as food, medicine, shelter, and ritual. These studies explore the traditional knowledge and practices related to plants and aim to document and preserve this cultural wisdom while also understanding its ecological, economic, and social implications (Khan et al. 2014). Its details interactions between humans and various natural elements, like soil types, climate zones, and vegetation communities (Arnold et al. 2015; Ahmad et al. 2014). Pakistan, rich in biodiversity and home to multiple global ecoregions, is an important site for the conservation of economically significant flora (Ali 2009). Globally, plant diversity faces significant threats from habitat loss, invasive species, pollution, rapid climate change, and population growth (khan et al. 2017; Abbas et al. 2016). In response, protected areas have emerged as vital conservation strategies for preserving vulnerable plant species (Mustafa et al. 2023). However, contrary to assumptions that these areas are secure, many remain vulnerable, especially in

developing nations, where conservation depends heavily on local communities. The role of biodiversity is crucial for ecosystem stability and functionality (Mustafa et al. 2023), and the current alarming decline threatens ecological balance. Anthropogenic activities deforestation, habitat fragmentation, and road construction continue to degrade biodiversity, pushing plant diversity towards critical thresholds (Mustafa et al. 2023; Ramzan et al. 2024). Environmental degradation often proceeds without regard for the permanent impacts on ecosystems that serve as habitats and sources of environmental stability. In urban areas, protected spaces are increasingly recognized as key for plant conservation. London alone, for example, supports over 2,000 wild plant species (Turner et al. 2011). Globally, in approximately 258,650 higher plant species, over 10% are used for medicinal purposes. Historical ethnobotanical knowledge has uncovered medicinal compounds, including tubocurarine, reserpine, aspirin, and morphine. In Pakistan, traditional medicine relies on wild plants to treat both minor and severe ailments, and demand for medicinal plants is on the rise, driven by local collectors and commercial herbalists, or pansaars. This growing interest has resulted in the commercialization of medicinal plant gathering, leading to extensive trade, including exports to other countries (Hong et al. 2015). Animals, too, are treated with these plants, and species initially used for specific treatments have been repurposed for other medicinal needs. Overharvesting by collectors, vendors, and drug dealers endangers the flora of Pakistan, with many medicinal plants facing extinction due to unsustainable practices (Penido et al. 2016). Effective management and sustainable utilization are essential to prevent the loss of these valuable species and the degradation of their habitats (Shinwari et al. 2011). Conservation efforts such as insitu and exsitu strategies are necessary to safeguard against the rapid decline in plant biodiversity. Economic challenges and healthcare demands are also significant. Rising poverty and population growth hinder the ability of communities to improve living standards and access adequate healthcare (Khan et al. 2014). In developing countries, where the cost of pharmaceuticals is high, 70–80% of the population relies on traditional herbal remedies. Ethnobotany, which studies how indigenous cultures use plants, reveals vast potential for medicinal and other practical uses, such as in food, textiles, and shelter (Jenipher and Ayyanar, 2024). Ethnobotanical research contributes valuable resources for pharmaceuticals and other industries. Being aware of this, the World Health Organization has identified the significance of traditional medicine in delivering key healthcare. Wild medicinal plants are most important among these, providing a type of "green social security" to populations across the globe. Nevertheless, habitat loss and over-use pose threats to these plants, making some species reach the verge of irretrievability (Mustafa et al. 2023). The conservation of these resources is key to maintaining biodiversity and protecting access to traditional health practices (Raja et al. 2020).

Materials and methods

The present study was conducted in Tehsil Taunsa Sharif, District Dera Ghazi Khan, Punjab, Pakistan. Predominantly, the region consists of alluvial plains formed by the Indus River, up to the western highlands. With Sufi shrines particularly the mausoleum of Hazrat Muhammad Suleman Taunsvi Taunsa Sharif holds cultural significance. Having an average annual rainfall of approximately 104 mm (Mustafa et al. 2023; Ramzan et al. 2024), the area experiences hot summers with a temperature of 45°C and cold winters which can

fall below freezing at an altitude of 157 meters. Using a standard questionnaire, ethnobotanical data was gathered by means of organized interviews with local herbalists, timber and fuel wood vendors, and community elders. Standard herbarium techniques were followed in gathering, drying, pressing, and mounting plant specimens. Flora of Pakistan was used for the identification of the plants (Zareen and Sardar 2013; Shah et al. 2016). The plant herbarium sheets, were deposited in the Dr. Sultan Ahmad Herbarium at Government College University, Lahore. All year long field expeditions were carried out to collect different plant species and to record the ethnobotanical data.

Quantitative Analysis

Fidelity Level (FL) and Use Vale (UV) helped to quantify the field-based gathered data.

Fidelity Level (FL)

The degree of fidelity (FL) indicates which species is most preferred for treating a particular illness or ailment. By calculating FL, we can easily identify the species best suited for addressing specific health conditions. The FL value is determined using the method described by Mir et al. (2022). Using the following equation:

$$FL= Ip/Iu \times 100$$

Whereas Ip shows the number of informants who utilize a certain plant species for a given disease, Iu shows the overall number of informants who recognise the same plant for any ailment.

Use Value (UV)

UV analysis is used to determine the relative relevance of each medicinal plant collected from the study area. The calculation was made using the formula shown below (Khan et al. 2011).

$$UV= \sum U/n$$

In the above described formula, ∑U denotes the uses of a specific medicinal plant recorded in this study, whereas shows the overall count of informants claiming the use of this medicinal plant. (Gillani et al. 2024).

Results

A total of 60 plant species—46 herbs (35 native and 11 exotic) and 14 shrubs (9 native and 5 exotic)—belonging to 24 families were collected from selected sites within the study area. (Table 1). The fidelity level (FL) of the documented plant species used to treat various human ailments ranged from 20% to 100%. The highest FL values were observed in *Calotropis procera*, *Sonchus asper*, *Sonchus oleraceus*, and *Lepidium didymum*, indicating their strong association with specific ailments. In contrast, the lowest FL was recorded for *Justicia adhatoda*. The Use Value (UV) of the species ranged from 0.52 to 0.95, with the highest UV found in *Corbichonia decumbens* (0.95), suggesting its frequent and versatile use, while *Jatropha integerrima* showed the lowest UV (0.52). The Poaceae family had the highest number of species (7), followed by Fabaceae (6), and Euphorbiaceae, Asteraceae, and Acanthaceae (4 species each). Additionally, families such as Aizoaceae (3 species), Apocynaceae, Amaranthaceae, and Capparidaceae (2–3 species each) were also represented. Ten families, including Brassicaceae, Lythraceae, Malvaceae, Solanaceae, Lamiaceae (2 species each), and Cleomaceae and Oleaceae (1 species each), were reported with fewer species (Figure 2). Taunsa Sharif serves as a vital gene pool of medicinal plants, underscoring the need for conservation. Involving local communities, especially

elders and religious scholars, and protecting areas around graveyards are key to preserving native vegetation.

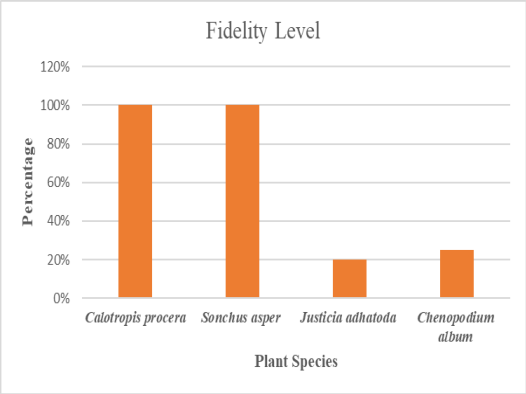

Figure.1 Total number of plant species recorded in various Life-forms

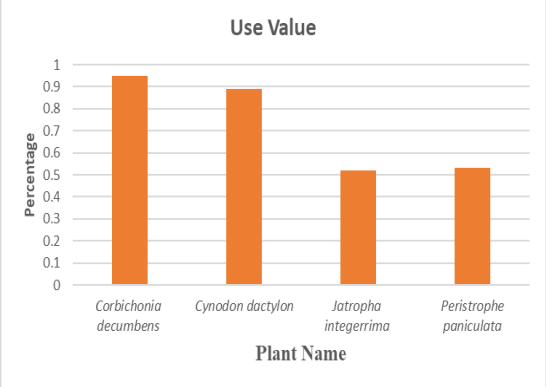

Figure.2 Family-wise distribution of recorded plant species

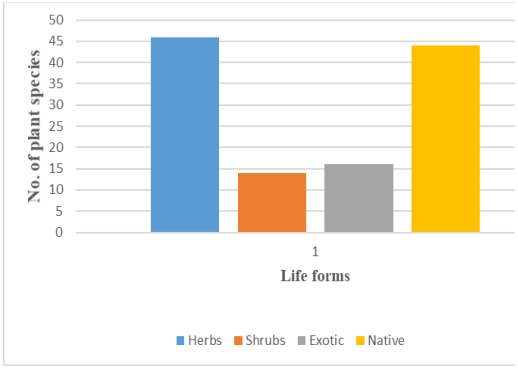

Figure.3 Family-wise distribution of recorded plant species

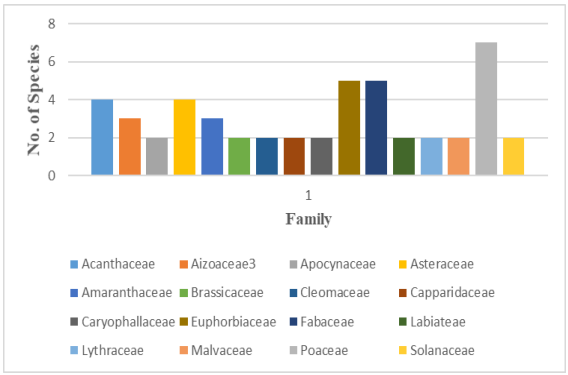

Figure 4. Showing the Use Value of Plant species

Table 1. Ethnobotanical Data on Herbs and Shrubs of Tehsil Taunsa Sharif District DG Khan

Families	Botanical name	Local name	Part of plant used	Habit	Habitat	Local use	Flowering period
1.Acanthaceae	*Dicliptera bupleuroides* Nees	Chaning	Leaves, Flower top	Herb	Sokar	Usually used as general tonic is powder derived from plants. it may also be used as fodder for livestock in some regions due to its herbaceous nature; it has no known uses in furniture or timber due to its soft and non-woody structure.	June-December
	Justicia adhatoda Linn.	Bahakar	Leaves	Shrub	Sokar	Bronchitis, asthma, coughing, and tough breathing are treated with the leaf extract.	November-April
	Peristrophe paniculata (Forssk.) Brummitt	Atri lal	Whole plant	Herb	Sokar	Given as an antidote in snake bites, herb is macerated in to an infusion of rice.	October-February
	Ruellia tuberosa Linn.	Trai -no	Whole plant	Herb	Infrequent at waste places/ basti buzdar	For blood cleansing, one injects a plant infusion. it is sometimes used as fodder.	Almost throughout the year
2.Aizoaceae	*Corbichonia decumbens* (forsk.) Exell	Patar Chatli	Whole Plant	Herb	sandy places/ basti buzdar	Against kidney stones, laves paste is very useful. One eats the plant as tonic. may serve as minor fodder in arid regions.	October-January
	Gisekia	Moraaho	Leaves,	Herb	Vahova	Plant is used	August-

	pharnaceoides Linn.		stem and capsule			medicinally as a purgative. The plant's tannins are present. occasionally grazed by livestock.	October
	Trianthema portulacastrum Linn.	It- sit	Whole plant	Herb	Gulki	Cattle eat fresh plants as their feed. Vegetables are grown from leaves.	May-October
3.Apocynaceae	*Calotropis procera* (Aiton) W. T. Aiton	Ak	Root, leaves	shrub	Barthi	The alcoholic solutions of *C. procera* root and leaves fever, rheumatism, indigestion, chest infections, eczema, and diarrhea. Local people also treated their animals with it. its fibers are used for making ropes and stuffing, it is occasionally used as drought fodder.	Throughout the year.
	Nerium oleander L.	Karabi	Seed, leaves	Shrub	Sokar	Treatments for parasitic skin worms, scabies, and swellings need for decoction leaves.	June to October
4.Asteraceae	*Conyza canadensis* L.	Fleabane	Leaves	Herb	Mandrani	It's a uterine stimulant, which helps alleviate swollen tonsils as well.	July to October
	Chrysanthemum indicum L.	Juhua	Flowers, seed, leaves	Herb	Field area	Its malaria therapy uses its blossoms. It also gives the residents of	Summer and autumn

						the area beautiful appeal.	
	Sonchus asper (L.) Hill	Thistle	Whole plant	Herb	Kareem wala	Skin problems among other ailments have been treated using the herb *Sonchus asper*.	Late spring to early fall.
	Xanthium strumarium L.	Chota dhatura	Leaves, root, seed	Herb	Sokar	Among the many diseases treated with *X. strumarium* include rhinitis, nasal sinusitis, fungal infections.	Late summer
5.Amaranthaceae	*Aerva javanica* (burm. f.) Shult.	Chiti jhari	Roots and flowers	Shrub	Mangrotha	Boiling seeds are administered to animals with foot and mouth illness. It's goat food as well as gasoline.	January and October
	Chenopodium album L.	Jari but	Leaves and young shoot	Herb	Basti buzdar	The root's juice treats dysentery with blood.	July to October
	Suaeda fruticosa Forssk. Ex J.F. Gmel.	Laana	Seed	Shrub	Common in saline area	*Sueda fruticosa* In medicine, this herb is used to heal wounds.	June to November
6.Brassicaceae	*Capsella bursa-pastoris* (L.) Medik.	Shepherd	Seed pods	herb	Basti mandrani	In medicine, dysentery and hemorrhages diarrhoea are treated with *capsella*.	Summer
	Lepidium didymum L.	Jangli halon	Whole plant	Herb	Kareem wala	It's used in traditional medicine to heal headaches and fevers as well as wounds. Being a vegetable, one eats its leaves.	July-September
7.Cleomaceae	*Cleome gynandra* L.	Hurhur	Leaves, seed, roots	Herb	Gulki	Crushed and used topically to treat Tinea	July-august

						captitis, *C. gynandra* is also consumed as a vegetable food.	
8.Capparidaceae	*Cadaba farinosa* Forssk.	-	Leaves, roots	Shrub	Sokar	One applies crushed leaves on sores. For diarrhea, cold and cough, rheumatic discomfort, the leaf extract is helpful.	October-December
	Capparis spinosa Linn.	kabar	Fruit	Shrub	Kareem wala	Insects eat fruit as well as humans do.	April-May
	Cleome glaucescens DG.	Parhar	Seed	Herb	Mangrotha	Seeds are orally used in cough, cold, and fever stew.	March-April
9.Caryophyllaceae	*Herniaria hirsuta* Linn.	Patrai	Whole plant	Herb	Sokar	Used as fodder for cattle.	September
	Spergula rubra (Linn.) J. & C. Presl	Jangli booti	Whole plant	Herb	Basti buzdar	Plant is diuretic.	March-June
10.Cyperaceae	*Cyperus rotundus* L.	Mustak	Whole plant	Herb	Moist rode side of Buzdar Shumali.	For generations, people have employed this medicinal plant to cure a range of clinical conditions at home.	Summer
11.Euphorbiaceae	Chrozophora tinctoria (Linn.) Raf.	Ner Booti	Seed	Herb	Sokar	Seeds induce vomiting. Plants provide the colorizing agent.	January-September
12-Fabaceae	*Euphorbia hirta* Linn.	Dudhi	Whole plant	Herb	moist places	grazing animals eat plants as their feed. Used in cough and asthma, bronchial infections, it is expectorant and anthelmintic. Dysentery is caused by juice.	July-December

	Euphorbia prostrata Ait.	Hazaar dani	Whole plant	Herb	Moist places	Riding animals eat it as food. Also serving as blood purifier, paste of plant used to reduce bleeding and pain acts as agent. Scabies is healed by plant paste.	Almost throughout the year
	Euphorbia pulcherrima Willd. ex Klotzsch	Poinsettia	Whole plant	Herb	Taunsa Sharif	One excellent veggie made from this plant is Treating inflammatory diseases, heart debility, neuralgia, nasal ulcers, and cholera uses the many elements of the plant.	December
	Alhagi maurorum Medik	Jharii	Whole plant	shrub	Gulki	Folk medicine makes use of it as expectorant, purgative, diaphoretic, rheumatism, warts, and piles treatment.	june-August
	Crotalaria pumila Ortega L.	Rattle box	Flower, leaves and shoot	Herb	Sokar	It boasts edible seeds used as pulses, attractive flowers and buds, and delicious blossoms and pods.	August - October
	Medicago polymorpha L.	Clover	Leaves	Herb	Basti buzdar	Using it as green manure helps nitrogen from the atmosphere repair itself. For repairing damaged soils, this plant is very helpful. One could feed animals with	February-March

						it.	
	Phanera vahlii (Wight & Arn.) Benth.	Malu	Seed and leaves	Shrub	Basti wala	Fresh bark is turned into straw mats here. Made from its stems are matting, basketry, and wickerwork.	April to June
	Trifolium Alexandrinum L.	Barseem	Whole plant	Herb	Mangrotha	Additionally used as a cover crop to suppress weeds or a green manure crop to provide nitrogen to next crops is *berseem clover.*	April- May
	Tephrosia vicioides Schltdl.	Hoarypea	Leaves	Herb	Taunsa Sharif	One of the few useful nitrogen fixing legumes available for use as live "Chop and drop" mulch in a permaculture forest garden.	June
13. Hydrangeaceae	*Deutzia scabra* Thunb.	Fuzzy	Leaves	Shrub	Sokar	Young leaves are cooking food. Made using that is mosaic tiles and wooden nails.	Early spring to mid summer
14.Lamiaceae	*Leucas urticifolia* (Vahl) R. Br.	Kubo	Leaves	Herb	Sokar	The plant is used in flu, fever, and gastrointestinal troubles.	July-October
	Salvia plebeia R. Br.	Samundar Sokh	Seed	Herb	Kareem wala	Menorrhea, gonorrhea, and diarrhea all need for seeds. Plants consumed by grazing animals.	March-June
15.Lythraceae	*Ammannia auriculata* Willd.	Jungli mehndi	Whole Plant	Herb	Wet places	Applied to produce blisters in rheumatic discomfort, fever, etc.	August-September

	Ammannia baccifera Linn.	Dadmari	Leaves	Herb	wet places	Against rheumatic pain, fever, etc., leaves work well.	March-August
16.Malvaceae	*Abutilon indicum* (Linn.) Sweet	Kanghi Booti	Whole plant	Herb	dry and waste lands	Treatments for inflammation and toothaches call for leaves. They provide mucilaginous seeds for piles.	March-April
	Urena lobata Linn.	Burr	Stem	Herb	Sokar	It is an important fiber plant. Its fiber is said to be more lasting than jute.	March-April
17.Nelumbonaceae	*Nelumbo nucifera* Gaertn.	Kanwal	Whole plant	Herb	Sokar	Herbal therapy makes use of the whole plant to treat many conditions. Such as body heat imbalance, fever, sleeplessness, gastritis and temperature. Folk remedies and eastern medicine have made use of this plant's leaves, seeds, and rhizomes.	March
18.Nitrariaceae	*peganum harmala* L.	Harmal	Seed, bark and root	Shrub	Mangrotha	The root was used to eliminate body lice in a particular region of Pakistan.	April to October
19.Oleaceae	*Jasminum officinale* L.	Chambali	Flower	Shrub	Mostly found in parks of Taunsa Sharif	Medicine is derived from jasmine plant floral form. Hepatitis (liver disease), cirrhosis, stomach discomfort and diarrhea	Summer

						(dysentery) are among the many diseases it treats.	
20.Plantaginaceae	*Plantago amplexicaulis* Cav.	Isafghol	Whole plant	Herb	Taunsa Sharif	Juice of the plant is taken as cooling drink.	March
21.Poaceae	*Arundo donax* L.	Giant reed	Leaves	Herb	Field	While the leaves may be weaved into mats, screens and house walls are built from the split and flattened stems. Reeds on clarinet and organ pipes come from this plant.	Late summer
	Cynodon dactylon (L.) pers.	Durva ghaa	Whole plant	Perennial grass	Dry area of gulki	It is used to bleeding and many kinds of skin disorders. Treatments for many ailments, including cough, anasarca, headache, cramps, measles, sores, stomach, tumours, wounds and cancer, include whole plants.	Late summer
	Dichanthium annulatum (Forssk.) Stapf	Jargu grass	Flowers and leaves	Herb	Mostly grow in dry fields of mangrotha	It is very important in agriculture. It is often utilized as a cattle fodder.	Throughout the year
	Dicanthium aristatum (Poir.) C. E. Hubb.	Jangli ghaa	leaves	Herb	Common in cultivated fields of the area.	It is often utilized as a cattle fodder.	Throughout the year
	Panicum repens L.	Luci ghaa	Whole plant	Grass like herb	mostly common in fields of basti buzdar.	Reclaiming saline soils is one advantage this plant offers. Among the many	June to November

						diseases it treats are sores, wounds, cancer, and coughing. Stopping bleeding is accomplished with its leaves.	
	Paspalum vaginatum Sw.	Gha	Leaves	Herb	Field	helps stop erosion on sandy soils and in areas rebuilt from tidal effects. Many times, cow feed is grass.	August-December
	Setaria viridis (L.) P. Beauv.	Fox tail	Leaves and seed	Herb	Taunsa Sharif	The seed is used as diuretic and emollient. To cure injuries, the plant is crushed, mixed with water, then applied topically. It can be fed animals. One uses it like rice or millet.	March to August
22.Polygonaceae	*Polygonum plebeium* R.Br.	Knotweed	Leaves and fruit	Herb	Mostly found on dry seasonal river beds of barthi.	Cooked and consumed as a vegetable, its plants leaves are Leaves of this plant used for oral and painful infection treatment. Lithontriptic and stomachic employ its leaves and berries.	Hot season
	Polygonum aviculare L.	Kuwar	Whole plant	Herb	Sokar	Mostly used to treat dysentery and hemorrhoids, this safe and effective astringent and diuretic herb is	July to August

						also For cough and bronchitis, it serves as an expectorant.	
	Rumex pulcher L.	boti	Whole plant	Herb	Gulki	Medicine is made from whole blooming plants. Salads are composed from its leaves. The plant is harvested from the wild for use locally as a food source and material supplier.	May September
23.Solanaceae	*Withania somnifera* (L.) Dunal	Asgand	Root and fruit	Herb	Himalayas area of mangrotha	It's utilized for anti-snake venom. It is used in rheumatism and coughing healing.	December to onward
	Datura fastuosa Linn.	Sufaid Datura	Whole plant	Herb	Taunsa Sharif	It is also used in human sexual power and T.B. medication. Seeds poison us. Fresh plant juice is provided in malarial fever and hydrophobia. To treat swellings, paste ripe fruit in mustard oil.	September-April
24.Zygophyllaceae	*Fagonia indica* L.	Damanhan	Whole plant	Herb	Sokar	In dysentery and vomitting. Applying paste of leaves, one treats neck swellings and malignancies. Camels and goats also feed on the shrub.	April to June

Fidelity level and Use Value

The level of loyalty indicates which species favours addressing a certain illness or condition over others. Through the use of FL, we may efficiently ascertain the species most appropriate for addressing a certain condition (Haq et al., 2023). The highest fidelity level was observed in two dominant species at 100% in *Calotropis procera* and *Sonchus asper* used for the treatment of snake bite and skin disorders respectively. *Justicia adhatoda* Linn. and *Chenopodium album L.* had lowest fidelity level of 20% and 25%. The use value determines the relative importance of the plant species reported by the informants (Rashid et al., 2015). The highest percentage of use value was observed in *Corbichonia decumbens* (forsk.) Exell. and *Cynodon dactylon* and lowest percentage was observed in *Jatropha integerrima* and *Peristrophe paniculata* (Forssk.) Brummitt.

Table-2: Plants used to treat Different ailments

Botanical name	Illness treated	Ip	Iu	FL value %	N	U	Use Value (UV)
Calotropis procera (Aiton) W. T.Aiton	Snake bites	25	25	100	22	27	0.81
Dicliptera bupleuroides Nees	General tonic	8	18	44.4	12	17	0.70
Justicia adhatoda Linn.	bronchitis, and asthma,	3	15	20	9	13	0.69
Peristrophe paniculata (Forssk.) Brummitt	antidote in snake bite.	22	24	88	7	13	0.53
Corbichonia decumbens (forsk.) Exell.	kidney stone	14	17	82.3	21	22	0.95
Cynodon dactylon (L.) Pers.	blood purification	14	16	87.5	17	19	0.89
Jatropha integerrima Jacq.	abdominal bloating	9	11	81.8	11	21	0.52
Trianthema portulacastrum Linn.	skin disorders	8	12	66.6	13	23	0.56
Nerium oleander L.	parasitic skin worms	5	16	31.25	15	19	0.78

Conyza canadensis L.	treatment of swollen tonsils	15	25	60	9	14	0.64
Sonchus asper (L.) Hill	Skin disorder	17	17	100	8	12	0.66
Sonchus oleraceus L.	Diarrhea	19	20	95	7	11	0.63
Chrysanthemum indicum L.	Aesthetic beauty	7	14	50	5	7	0.71
Aerva javanica (B. f.) Schult.	anthelmintic	5	9	55.55	4	6	0.66
Chenopodium album L.	blood cleanser	3	12	25	6	9	0.66
Suaeda fruticosa Forssk. Ex J.F. Gmel.	Treatment of wounds	12	14	85.71	7	12	0.58
Epidium didymum L.	Diarrhea	22	24	91.66	8	10	0.8
Cleome glaucescens DC.	cough, cold and fever	9	14	64.2	7	9	0.77
Spergula rubra (Linn.) J. & C. Presl	Analgesic	20	26	76	3	5	0.6

Discussion

This study highlights the conservation of medicinal plants in Tehsil Taunsa Sharif, where a number of plant species have medical, fodder, and cultural importance (Mustafa et al. 2023). Due to the growing popularity of traditional medicine and degradation of natural habitats, their conservation is vital for biodiversity and human health (Abbas et al. 2024). The local gene pool of medicinal species is a rich resource, contributing potential benefits towards healthcare and financial security. The preservation can succeed only with people-oriented conservation at Taunsa Sharif. Local communities, especially religious clerics and honorable elders, are central to resource management for the long term (Liaqat et al. 2023). They can have added value by educating and promoting sustainable harvesting practices and developing a cultural commitment to conserve plant diversity. It is important to involve community leaders in conservation activities, as they assist in developing sustainable practices for generations to come. Conservation of areas adjacent to the study region is also paramount (Sabir et al. 2024). The areas bordering Taunsa Sharif tend to have similar plant cover and can be prone to overexploitation and

degradation of ecosystems. Widening conservation activities to areas surrounding Taunsa Sharif would make ecosystems more resilient and integrated, thereby providing greater stability to flora and fauna. Sustainable harvest techniques and regulated trade are necessary in order to prevent over-exploitation of these species (Ullah et al. 2024). Educating indigenous traders in sustainable techniques reconciles medicinal plant requirements with conservation needs. Involving indigenous traders in conservation programs can offer a more sustainable approach to fulfilling market demands (Waheed et al. 2023).

Conclusion

Taunsa Sharif is an endangered area known for its potential in the conservation of plant diversity. Recording the ethnobotanical information of this area is vital to allow local people to use the indigenous plant resources sustainably for medicinal, cultural, and economic reasons. Conserving such traditional knowledge aids the conservation of worthy species and promotes sustainable practices among local people. By emphasizing the ethnobotanical significance of Taunsa Sharif, we can better protect plant biodiversity while enabling local communities to derive benefits from these resources in a responsible manner.

Figure A. Alhagi maurorum plant used as medicinal and fodder purposes. Figure B. Hay rack used for fodder of animal. Figure C. Calotropis procera plant Figure D. Suaeda vera E. Ipomoea carnea Figure F. Cucumis melo G. Trifolium alexandrinum leaves used as fodder of animals

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