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Qualitative and Quantitative Ethnobotanical Study of Arrang Valley of District Bajaur, Khyber Pakhtunkhwa Pakistan

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ABSTRACT

The findings of the ethnobotanical field work in the Arrang valley of Bajaur are presented. Arrang is a closed valley, 18 kilometers long and gifted with some of the most important plant species which are on the verge of extinction. How this traditional knowledge can contribute to modern scientific human plant diachronic interactions, is emphasized in the current research. Totally 180 persons were properly interviewed in Arrang, ranging from specialists in traditional ethnobotanical knowledge to common persons. Although the valley and its adjacent area about of 300 species. During current research only 163 species were documented. Only two species of gymnosperm were found worth consideration and 118 species belonging to 80 families of Angiosperms were documented. One species belong to Pteridophytes. These plants have been in active use up to the present time as food, medicine, tools, materials for construction, resources for rituals, for the sake of naming, fodder, timber, fuel, honey bee attractants, aromatic, broom making, toothbrush, ornamental, cage making, rope making, staple food, vegetable, fruit, flavoring and soil binders etc. According to the accumulated ethnobotanical information most of the plants served multiple functions. The most abundant species belonged to families Brassicaceae, Asteraceae, Rosaceae, Euphorbiaceae, Lamiaceae and Solanaceae. Due to over exploitation and over grazing about 12 species are on the verge of extinction in the area such as *Xanthium stromonium*, *Ammivisnaga*, *Foeniculum vulgare*, *Trigonella foenum-graecum*, *Melia azedarach*, *Ailanthus altissima*, *Berberis lycium*, *Quercus baloot*, *Rumex hastatus*, *Tecrium stocksianum*.

Keywords: Ethnobotany, Local communities, 118 species of Angiosperms, 80 families of Angiosperms, 2 species of gymnosperm, One species of Pteridophytes.

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1. INTRODUCTION

District Bajaur present in the north East Latitude 34° 30' to 34°58' North as well as Longitude 71°11' to 71°48' East occupying an area of 1290 square km at present time. The district is also divided in to seven tehsil 1. Khar (142sq)². Salarzai 253, Mamund 216, Nawagai150, Chamarkand 009, Uthman Khel 150 and Barang tehsil 370 sq.km area respectively (Ullah et al. 2018). Bajaur has 46.55 km long common border line with Afghanistan's province, Kunar; with lower Dir's region Jandool, the boundary line is 56.75 km; with Mohmand its length is 68.19 km and Malakand Agency shares 23.68 km long boundary line with Bajaur (Ajaib et al. 2021). The total population according to the recent census exceeds 1.5 million persons. Bajaur lies amid Latitude 34° 30'to 34°58' North as well as Longitude 71°11' to 71°48' East. Occupying an area 1290 Km square at present time (Ullah et al. 2023). Arrang is the dwelling place mainly of Uthman Khel tribe, particularly of the Shamozaib branch of Uthman khels (Ullah et al. 2018). Uthman Khel belongs to Karlani stock of Pashtun tribes, but they had put in their lot with Khakhi Khel and particularly Yousafzai tribe. They helped one another in different battles and usually migrated jointly from one place to another. Uthman Khel had their abodes in the vicinity of Kabul along with Yousafzai (Farooq *et al.*, 2010; Ullah et al. 2018). Later on, they migrated to Nangahar and then to Tank and Gomel valley. From there the whole family shifted to Peshawar, but the atmosphere was not conducive for this tribe's nomadic habits there, and as a consequence went to Teerah and after the battle of Katlang the whole tribe shifted to the present locality, Arrang. And since that time, they have been residing there and have trickled down and moved side by side, occupying much larger space for their residence (Ahmad et al. 2006). The total population of Arrang valley is 60,000 individuals. As the area is landlocked and fertile land is very scanty due to lack of abundance of water, a lot of families migrate to other parts of Bajaur or elsewhere. Although most of the people of this area are attached to agriculture (Lubna et al. 2023). A climatic condition of district Bajaur is severe in together winter as well as summer. The winter is very moist as well as cold while summer is very hot and June July is the hottest month which mean the high temperature is 33°C and 24°C correspondingly (Ajaib et al. 2021). The coldest months as January and December which mean high temperature of 7°C in December 9°C but in January

which are wrote in the (Yaseen et al. 2019). Ethnobotany is the learning of alliance as well as association among people along with plants in place with time (Ullah et al. 2018). Every learning that describes involvement amongst the plants and local people are related to ethnobotany (Murad et al. 2013). It is the branch of science which deals with relationship between plants and people (Khan et al. 2018). Since olden days human has been in close association with plants for the sake of food, shelter and medicine. Indigenous communities of the world have been since long dependent on plants for their objects of ritual and common use. Land with environment has been of tremendous import for flowering and growth of the cultural, religious and social systems (Ullah et al.2018). Plants acting as safeguard and steward of their domain and environments, they have been entrusted by their ancestral characters to take care of these during several succeeding generations (Ullah et al. 2023). Local people have great potential and capability to develop practices and products from their environments. No sooner Pakistan came in to being than the documentation of indigenous knowledge about the usefulness of plants and its myriad of uses was started in earnest (Irfan et al.2018). Different researchers devoted their lives solely for this pursuit. "Botanical survey of medicinal plants" was an ambitious project of 1951, launched by Pakistan Ministry of Food and Agriculture (Ullah et al. 2021). These days almost all parts of the country have been rummaged for ethnobotanical purposes and thousands plant species have been identified with their particular indigenous uses. It is true that ethnobotany is still in embryonic stage in Pakistan (Hussain, 2021). The objective of the present study (1) to explore medicinal plants of research area (2) to study the biodiversity of angiosperms (3) to documents the ethnobotanical use of the area.

2. MATERIALS AND METHODS

The ethnobotanical information of the valuable plants of Arrang valley Bajaur was collected from April 2019 to March 2020. The research area was visited regularly, local people were interviewed, and data on ethnobotanically and medicinally valuable plants was collected. A modified questionnaire was also used in the collection of information from the people. The collected information was also cross-checked during these study trips. Mostly aged people were selected for interview, with only fifty (50) people were contacted from the research area. The

plant samples were gathered from all parts of the study region. The collected flora was recognized with the assist of obtainable literature as well as the latest principles of Plant Taxonomy, particularly those of Flora of Pakistan Tropics Project (Farooq et al. 2010). The time-tested and herbarium cards were correctly stacked for identification after the collected plants were properly pressed and dried (Khan et al. 2009; Ullah et al. 2023). The collected plant was properly preserved by treating with Naphthalene and moth balls. The plant specimen was deposited in the herbarium of the Botany Department at Bacha Khan University in Charsadda.

2.1 Quantitative study

Quantitative indices were calculated for the collected data to make the information more authentic and accurate. These indices were these i.e., Relative Frequency Citation, Relative Importance as well as Use Value (Hussain et al. 2022).

2.2 Relative Importance

It is intended as $RI = \frac{NUC+NT}{N}$ Where NUC indicate numeral of exploit classes as well as NT indicate numeral of utilize aspects. Which value is NUC is intended as $NUC = \frac{NUCS}{NUCVS}$ where NUCS show numeral of exploit categories with the meticulous taxa in the NUCVS indicate numeral of exploit groups with most versatile taxa which value is NT is intended as $NT = \frac{NTS}{NT.MIT}$, where NTS indicates numeral of total utilized of every category credited the species. The MIT shown numeral of whole exploited of all categories of mainly adaptable species in their latest research study (Shuaib et al. 2019).

2.3 Relative Frequency Citation

Relative Frequency Citation was calculated by the following formula as $Rfc = \frac{FC}{N}$, Where the Fc = Frequency Citation in the N is the entire numeral of interviewees. The FC characterized the numeral of utilize cited through the kind of correct species. Class of RFC deceit amid 0 and 1:0 show that the flower is not mention through even a solitary being, also 1 shows that all candidates mentioned the meticulous plant to be helpful (Ullah et al. 2023).

2.4 Use Value (UV)

The values were intended through the follow formula, $UV = \frac{\sum U_i}{N}$ in the U_i indicates that the entire

numeral of a correct sp. affirmed through one informant to N is the whole numeral of interviewees. Similarly, $\sum U_i$ suggest the total numeral of exploited the flora by the citizens (Abbasi et al. 2013).

3. RESULT AND DISCUSSION

The people of Arrang valley are still dependent on plants in their daily lives. Because people are poor and cannot afford the modern allopathic medicine. In the current research work a total of plants cannot be separated from their lives and this reciprocal interdependence is accountable for the preservation of plant variety. Plants are either used singly or in mixture. Medicinal plants such as *Mentha longifolia*, *Acacia modesta*, *Podophyllum headroom*, *ajuga bracteosa*, *Prunus domestica* etc. are some of the medicinal plants which are in active use in Arrang. Some of the most valuable therapeutic vegetations on the verge of extermination due to over exploitation. Among these are *Periploca aphylla*, *Calotropis procera*, *Funiculum vulgare*, *Ammi visnaga*, *Ziziphus mauritiana*, *Withania somnifera* etc. So far know how about the use and identification of useful ethnomedicinal use of plants is concerned; elderly people beyond 60 years of age have almost 40 percent of the required knowledge. Plants are utilized for treating various ailments, accounting for 6% of the overall diseases prevalent among them. Pathetically the young generation below 50 years of age have very low level of knowledge about medicinal plants ranging from 10 to 12 %. Their use of medicinal plants was very less just falling in the ratio of 0.78 %. Children of Arrang are almost ignorant about medicinal plants but during illness they are at first treated with these medicinal plants. Due to steel and cement the trends of using timber in the constructions has been reduced considerable but still the use is visible. Furniture has retained the wood as in old days and people prefer it in comparison with steel. Complete detailed of the ethno botanical valuable plants are as below.

The research area consists of 53% shrubs, 27% trees, and 20% other vegetation. The dominant presence of shrubs provides essential cover and nesting sites for small mammals and birds, while the towering trees offer food and shelter for larger species. The remaining 20% of other vegetation, including grasses and herbs, contributes to the overall biodiversity by providing food sources and habitats for various organisms.

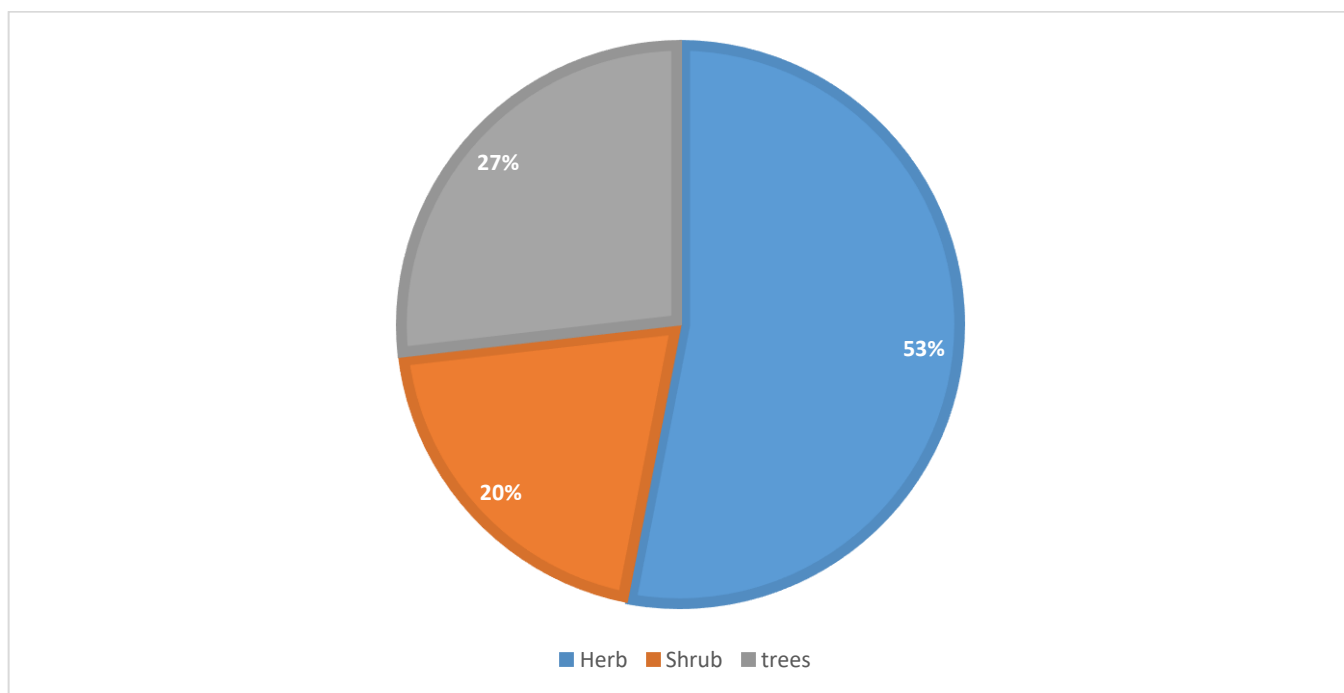


Figure No: 1 Habit wise representation of plant species of research area.

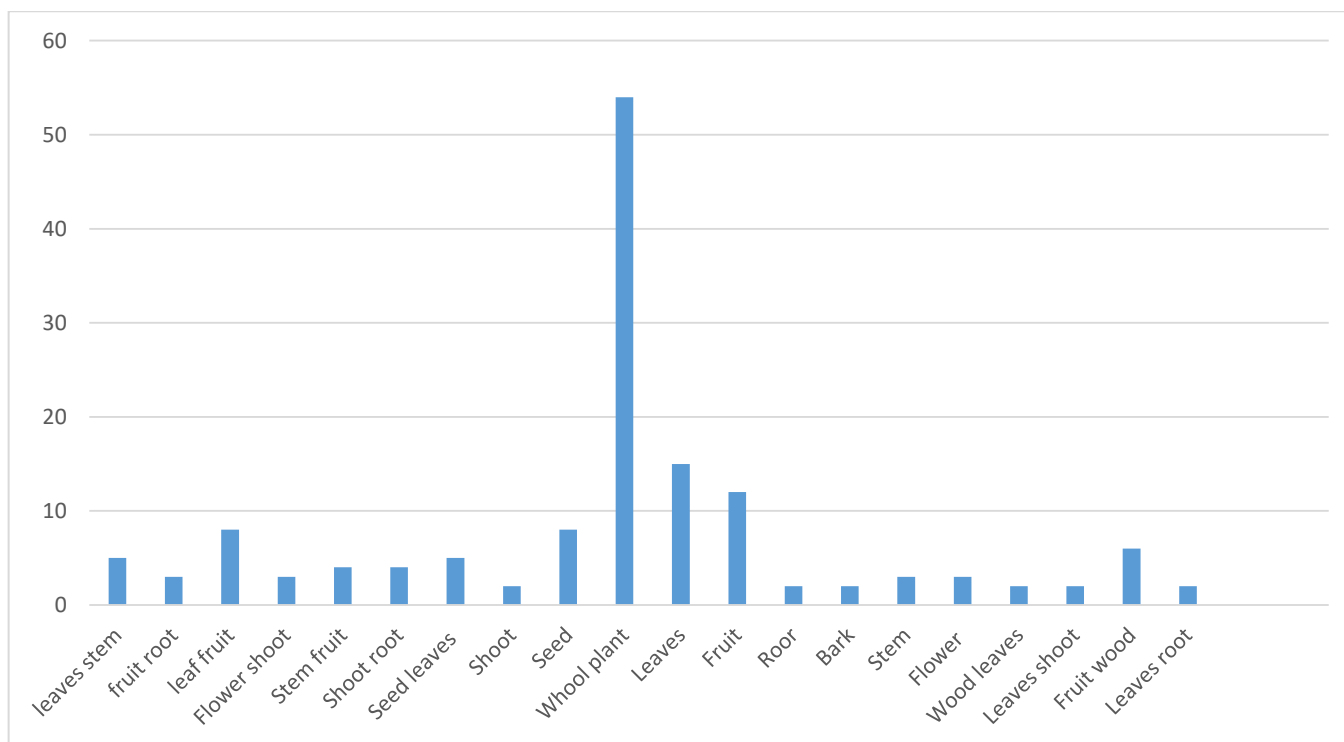


Figure No: 2 showing plant parts using in research area.

Based on the data, 163 plants were used in various ways, with the majority being utilized as an entire plant (59.56%), followed by leaves (9.83%), seeds (2.73%), fruits (9.83%), roots (1.63%), seeds and leaves (0.54%), root, leaves, and seed (0.54%), root and leaves (1.63%), fruit and leaves (7.10%), leaves,

flowers, and latex (0.054%), fruit and seed (0.54%), leaves and flower (1.09%), root and bark (0.54%), wood and fruit (1.09%), flowers (1.09%), seed and latex (0.54%), root and fruit (0.54%), and leaves and stems (0.54%). Based on the data, it is evident that a wide variety of plants were utilized in different ways,

with the majority being used as an entire plant. Leaves, fruits, roots, seeds, and other plant parts were also utilized in varying proportions, highlighting

the diverse range of uses for these botanical resources.

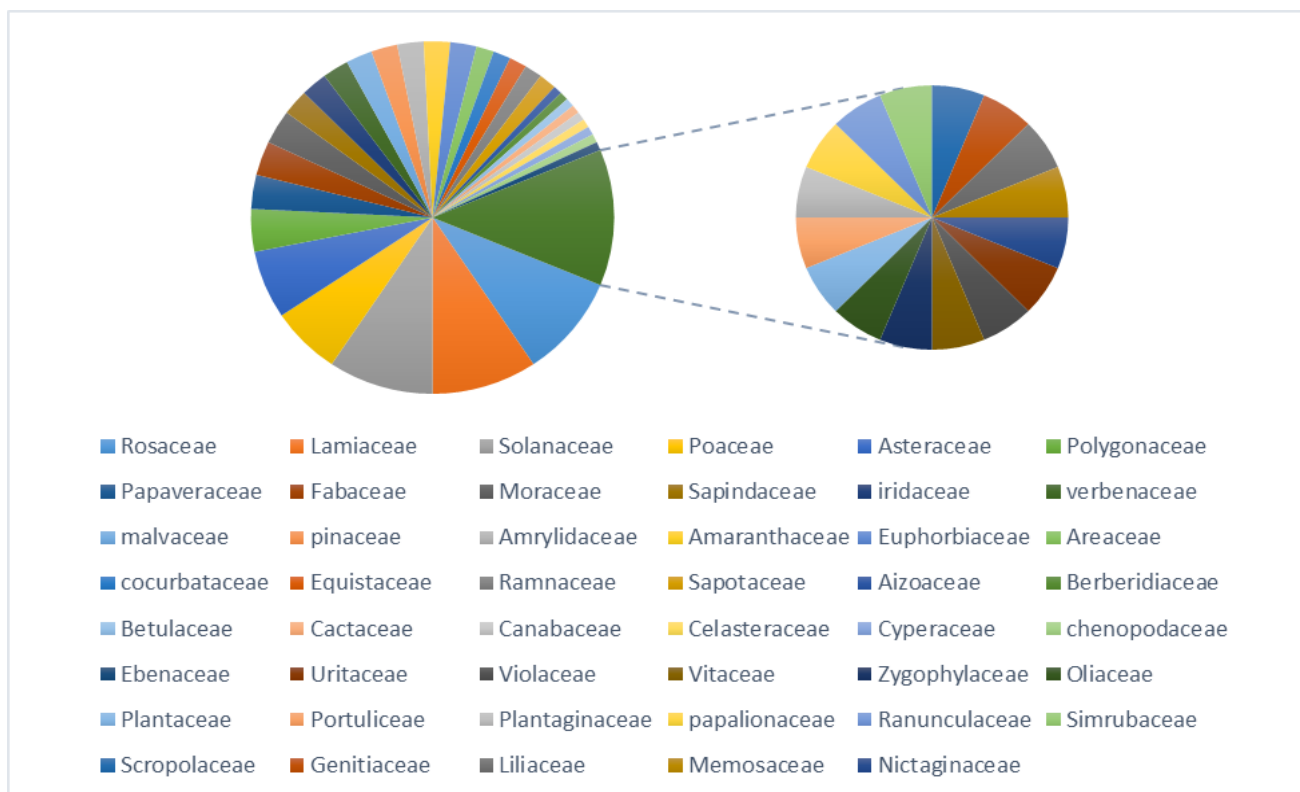


Fig: 3 Show family wise representation of plant present in the research area.

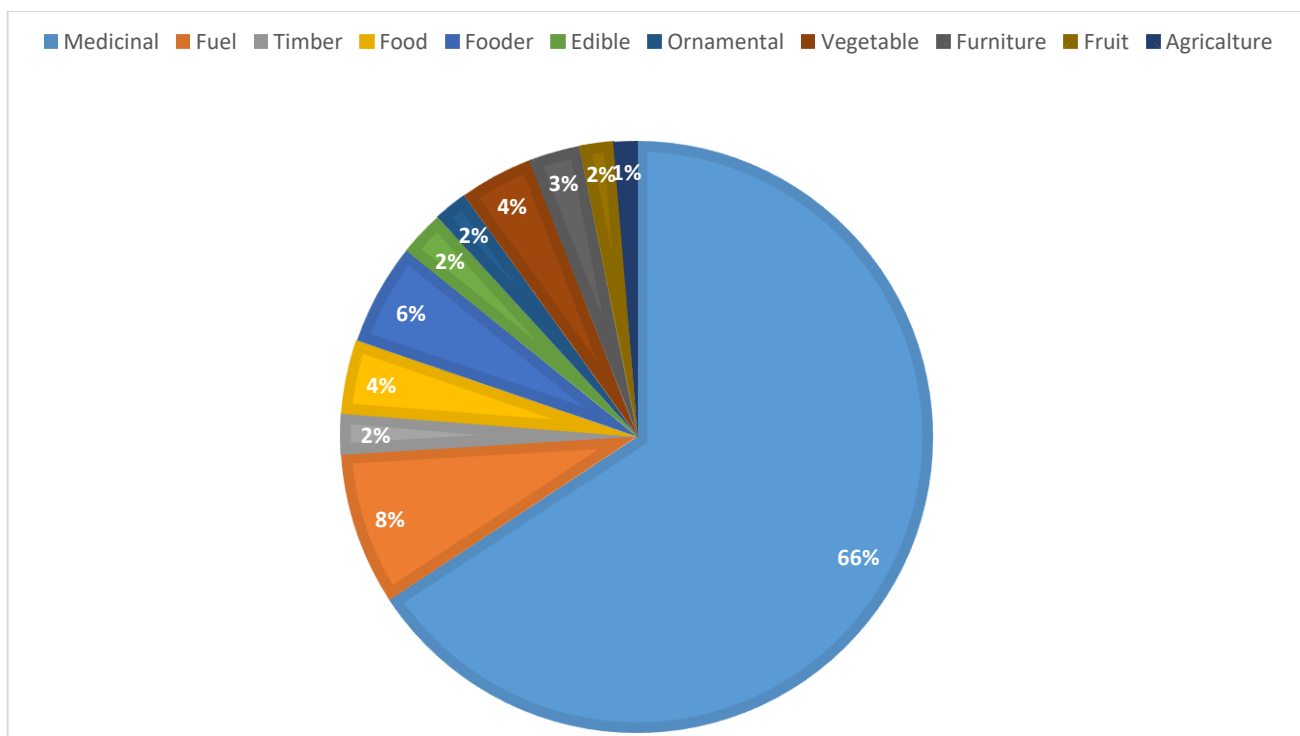


Fig No: 4 represent plant species used for various purpose.

The Rosaceae, Lamiaceae, and Solanaceae groups were the largest, with 12 plant species each. Poaceae and Asteraceae had 8 species. Polygonaceae had five species. Papaveraceae, Fabaceae, and Moraceae each had four species. Sapindaceae, Iridaceae, Verbenaceae, Malvaceae, Pinaceae, Amrylidaceae, Amaranthaceae, and Euphorbiaceae each had three species. Areaceae, Cucurbitaceae, Equistaceae, Rhamaceae, and Sapotaceae each had two plant species. Aizoaceae, Berberidiaceae, Betulaceae, Cactaceae, Canabaceae, Celasteraceae, Cyperaceae, Characeae, Chenopodiaceae, Ebenaceae, Urtiaceae, Violaceae, Vitaceae, Zygophyllaceae, Oleaceae, Plantaceae, Portulicaceae, Plantaginaceae and Papilionaceae, Ranunculaceae, Simrubaceae, Scropolaceae, Gentianaceae, Liliaceae, Mimosaceae, and Nictaginaceae each had one plant species. Among these plants, herbs were the most commonly used by the local population, followed by shrubs.

Based on research data, the majority of the area is covered by medicinal plants, making up 66% of all the data. 8% of the plants are used for fuel, 2% for timber, 4% for food, 6% for animals' fodder, and 2% of the plants are edible. 2% of them are ornamental plants, 4% are used as vegetables, 3% are used for furniture, 2% are fruits, and 1% are used for agriculture. Based on this rich diversity, it is clear that the region's flora plays a crucial role in supporting both traditional and modern livelihoods. The extensive use of medicinal plants reflects the deep-rooted knowledge of natural remedies within the local communities.

From the Arrang valley 163 valuable plants are collected between these 52 (31.90%) plants are in used for medicinal purpose. Amongst the medicinal plant *Accia niltica*, *Acaia moesta*, *Donea vicosa*, *Metha longiolia*, *Fagonia indica*, *Plantago major*, *Justicia adhatoda*, *Allium sativa*, *Coriandrum sativum*, *Funiculum vulgar*, *Phoenix dactylifera*, *Calotropis procera*, *Psidium guajava*, *Teucrium stocksianum*, *Solanum surrattense*, *Withania coagulants* as well as *Punica granatum* was also highly valued for its medicinal properties and was used to treat various ailments such as digestive issues and inflammation. Additionally, its vibrant red color made it a symbol of fertility and abundance, often depicted in art and religious rituals. From Swat 93 medicinal plants were also collected which were used for the treatment of different type of disease. (Shah et al. 2021; Kamran et al. 2020). A total of 13 (7.97%) of the plants were

used as food. Among these plants *Precarious fistulas*, *Luffa acutanula*, *Cucumis sativus*, *Cucumis melo*, *Lagenaria siceraria*, *Vigna unguiculata*, *Diospyros kaki*, *Cymbopogon citrates*, *Pyrus communis*, *Pyrus persica* are most important to the local's people (Kayani et al. 2014; Ullah et al. 2019). Work on the medical plants as well as their conventional utilization in Village Thana, District Malakand, KpK, Pakistan and reported various plants species which are used as food. A total of 18 (11.65%) plants used as fodder for various animals (Khan et al. 2003). A total of 63 (3.68%) plants species were employed for ornamental intention. Among these plants *Narcissism Poeticus*, *Plumeria rumba*, *Tagetes minut* *Ipomoea hederaca*, *Thuja orientalis*, *Salvia moorcroftana*, *Callistmon cuminatus* (Ullah et al.2023), *Mirabilus Jalapa*, *Pteris ceritica*, are mostly planted the locals (Ullah et al. 2023) Work on the ethnobotany of Ranyal hills, District Shangala, Pakistan and recorded 7 ornamental species. *Poplus* *Aba*, *Platanus orientalis* are the most important plant species which were utilized through the local peoples for ornamental. A total of 9 (5.52%) plants are used by the local people for furniture. Among these plant *Quercus incana*, *Ficus carica*, *Olea ferrognea*. *Platanus orientalis*, *Populus alba* used by the local people. Work on the ethno botany of Thana Village, Distract Malakand and Khyber Pakhtunkhwa, Pakistan for furniture purposes. Consequently, the area needs suitable organization of these precious plants as well as particularly the remedial plant require conservation.

4. CONCLUSION

The aims of present investigation were to provide an ethnobotanical profile of Arrang valley. The ethnobotanical evaluation of plants of selected area was determined the uses of plants by local inhabitants. The main purpose of this study was determined the medicinal uses of plants for different disease. The present study of plants was documented the economic values of the plants of research area.

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I am thankful to my supervisor Dr. Fazli Rahim, Department of Botany, Department of Botany, Bacha Khan University Charsadda Khyber Pakhtoon Khwa, Pakistan for providing necessary facilities and cooperation during this research work.

Table no: 1 provides a comprehensive overview of plant botanical names, family, local names, ethnobotanical uses, important values, and frequencies of their use in this research.

SL. No	Plant name	Family	Local name	Ethnobotanical uses	Important value	Relative frequency	Use value
1	<i>Pinus longifolia</i>	Pinaceae	Nakhtar	Used for fuel, Timber and Medicinal	1.16	0.7	0.7
2	<i>Acacia modesta</i>	Fabaceae	Palosa	Wood is used as fuel and traditionally used for the treatment of backache, dysentery and bacterial infection etc.	0.83	0.7	1.0
3	<i>Zanthoxylum armatum</i>	Rutaceae	Dambara	Used as a Medicinal as well as Vegetable	1.58	0.9	0.6
4	<i>Teucrium leucocladum</i>	Lamiaceae	Yakandaaz	It is used for the treatment of fever, hepatitis and stomach problems	0.41	0.7	0.5
5	<i>Quercus incana.</i>	Fagaceae	Sirai	Used as Fodder, Medicinal, Fuel and Fruit.	0.75	0.9	0.5
6	<i>Nannorrhops ritchiana</i>	Arecaeae	Maizaray	Used as a rope and food.	0.41	0.9	0.5
7	<i>Platanus orientalis</i>	Plantaceae	Chinar	Furniture, and fuel purposes	1.16	0.9	0.7
8	<i>Olea ferrognea</i>	Oleaceae	Khona	Used for constipation and	0.83	0.7	0.6
9	<i>Ficus carica.</i>	Moraceae	Inzar	It is used for fuel. Its fruit is also used for constipation	0.58	0.7	0.6
10	<i>Indigofera amblyantha</i> Craib	Papilionacea	Ghoreja	Young shoots are used for the manufacturing of baskets.	1.91	0.9	1.0
11	<i>Cynodon dactylon</i>	Poaceae	Kabal	Grown in lawns and as fodder for grazing cattle	0.75	0.7	1.0
12	<i>Desmostachya bipinnata</i>	Poaceae	Drab	Fuel and Packing	1.41	0.9	0.6
13	<i>Saccharum spontaneum</i>	Poaceae	Saccharumspontaneum	Used for making baskets and also used for brooms	0.41	0.9	1.1
14	<i>Opuntia dillenii</i>	Cactaceae	Zaqoom	Generally used by diabetic patients and also used an ornamental plant	0.83	0.9	1.0
15	<i>Artemisia absinthium</i>	Asteraceae	ZangliTarkha	Usually grown on graveyards traditionally. It is use as a fuel.	0.58	0.7	1.0
16	<i>Osmium bacilicum</i>	Lameaceae	Lameaceae	Leaves Used for external wounds, leaves are also used as expectorant.	0.58	0.7	0.7
17	<i>Equisetum arvense</i>	Equisteaceae	Bandakay	It is use as a fodder for animals and used to remove stones from the kidney	0.75	0.9	1.0
18	<i>Cannabis sativum.</i>	Cannabaceae	Bhung	Commonly utilized as for narcotic purposes and pain leaving agent.	0.58	0.7	0.7
19	<i>Maytenus royleanus</i>	Celastraceae	Spin Azghay	Medicinal, Fuel, and Vegetable.	0.83	0.9	0.9
20	<i>Tulipa orphanidea</i>	Liliaceae	Ghantol	Used as a medicinal.	0.41	0.9	0.9
21	<i>Punica granatum</i>	Lythraceae	Anungoray	Used as a Medicinal, Fuel and Agriculture.	0.41	0.9	1.2
22	<i>Ranunculus muricatus</i>	Asteraceae	Zergulay	Use as a fodder for animal and utilized in diaphoretic.	0.83		0.7
23	<i>Ranunculus saleratus</i>	Ranunculaceae	Jashagay	Used as a Fruit, Medicinal and Fuel.	0.58	0.7	1.1
24	<i>Ziziphus mauritiana</i>	Rhamnaceae	Markhanai	Used as a food, Medicinal and Agriculture.	0.58	0.7	0.9
25	<i>Eriobotrya japonica</i>	Rosaceae	Lowkat	Used as a timber and Medicinal.	0.75	0.9	0.6

26	<i>Prunus domestica</i>	Rosaceae	Aloochoa	Food, Medicinal and Timber.	0.58	0.7	0.7
27	<i>Prunus armeniaca</i>	Rosaceae	Khoobanai	Used as a food, Medicinal and Timber.	0.83	0.9	2.0
28	<i>Prunus persica</i>	Rosaceae	Shaftaloo	Used as a food, Medicinal and Timber.	0.41	0.9	0.8
29	<i>Prunus communis</i>	Rosaceae	Nashfati	Used as a food, Medicinal and Timber	0.41	0.9	1.0
30	<i>Rosa indica.</i>	Rosaceae	SoorGulab	Used as a fragmented and Agriculture	0.83	0.7	1.8
31	<i>Rubus ulmifolius</i>	Rosaceae	Karwara	Used as a Food and Agriculture	0.58	0.7	0.8
32	<i>Citrus sinensis.</i>	Rutaceae	Malta	Medicinal, Fuel and Fruit.	0.58	0.9	1.6
33	<i>Zanthoxylum armatum</i>	Rutaceae	Dambara	Used as a Food and Medicinal.	0.75	0.7	1.7
34	<i>Populus alba.</i>	Salicaceae	WataniSperdar	Used as a food, Medicinal, Fuel and Fencing	0.58	0.9	0.7
35	<i>Populus nigra</i>	Salicaceae	Sufaidad	Furniture and timber.	0.83	0.9	0.9
36	<i>Salix babylonica</i>	Salicaceae	Asleewala	Furniture and timber.	0.41	0.9	0.8
37	<i>Salix tetrasperma.</i>	Salicaceae	wala	Furniture and timber.	0.41		0.7
38	<i>Dodonaea viscosa</i>	Sapindaceae	Ghoraskai	Used as a Food and Fuel.	0.83	0.8	0.9
39	<i>Monothecha buxifolia</i>	Sapotaceae	Gorgowara	Medicinal, Food, Fuel and Fruit.	0.58	0.8	1.8
40	<i>Ailanthus altissima</i>	Solanaceae	Sapenna Shundai	It is used for toothache, fever, hyperlipidemia, poor blood circulation as well as heart illness avoidance	0.58	0.8	0.9
41	<i>Verbascum thapsus</i>	Solanaceae	Har ghwag	Extract of leaf used for to thatched, headache and epilepsy. Outside leaf are used to harsh limbs. Seeds are antipyretic and narcotic. Dry leaf and flower are used for antispasmodic and also use for fuel.	0.75	0.7	0.8
42	<i>Capsicum Annum</i>	Solanaceae	Marchakay	Toothache, headache and epilepsy.	0.58	0.8	0.6
43	<i>Cestrum nocturnum</i>	Solanaceae	Rat ki Rani	Its leaf is use in cooked form as a vegetable. Fruit is used for the treatment of inflammation and liver problems.	0.83	0.6	0.6
44	<i>Datura stramonium</i>	Solanaceae	Batoora	Extract of leaves is used for toothache, headache and epilepsy	0.41	0.8	0.5
45	<i>Solanum nigrum</i>	Solanaceae	Kacmachoo	Use in cooked form as a vegetable	0.41	0.6	0.7
46	<i>Solanum surratense</i>	Verbenaceae	Maraghoonay	It is used for the treatment of digestive disorders, exhaustion, jaundice, spasms, nervous conditions, gallbladder and liver infections	0.83	0.7	0.8
47	<i>Withania somniferum</i>	Solanaceae	Kotilal	Use for fertility purposes in sterile women	0.58	0.9	0.7
48	<i>Verbena officinalis</i>	Verbenaceae	Shoomakay	It is used for the treatment of digestive disorders, exhaustion, jaundice, spasms, nervous conditions, gallbladder and liver infections	0.58	0.8	0.6
49	<i>Polygonum barbatum</i>	Polygonaceae	Palpulak	It is used for the treatment of fever, pain as well as a diuretic agent.	0.75	0.9	0.9
50	<i>Rumex dentatus</i>	Polygonaceae	Shalkhay	It is use as antitumor, bactericidal, anti-helminthic, anti-inflammatory, anti-dermatitis as well as astringent. Its roots used in folk medicine for the treatment of eczema, diarrhea,	0.58	0.9	0.7

				acarasis, as well as constipation			
51	<i>Rumex hastatus</i>	Polygonaceae	Tarookay	Generally, use for fuel purposes	0.83	0.5	0.8
52	<i>Equisetum arvense</i>	Equisetaceae	Bandakay	It is used commonly for the treatment of kidney troubles and tuberculosis, to stop bleeding, heal wounds as well as ulcer	0.41	0.5	0.8
53	<i>Cedrus deodara</i>	Pinaceae	Diyar Ranzra	The wood is medicinally used for the treatment of flatulence, fevers, urinary and pulmonary disorder, piles, insomnia, kidney stones, rheumatism, and diabetes etc. It is also used for furniture and fuels	1.41	0.6	1.3
54	<i>Allium cepa</i>	Amaryllidaceae	Piyaz	It is used for curing of, asthma as well as bronchitis, gastro intestinal disorder. It is also used as a vegetable	0.58	0.4	0.9
55	<i>Allium sativum</i>	Amaryllidaceae	Aooga	Used for the cardiac problem and it cloves are directly used for the lower the blood pressure	1.58	0.6	1.1
56	<i>Cyperus rotundus</i>	Cyperaceae	Della	It is used for the treatment of malaria diabetes, diarrhea, stomach as well as bowel disorders	0.41	0.6	1.4
57	<i>Tulipa clusiana</i>	Poaceae	Ghantol	The plant is also use and can be as a fuel	0.83	0.6	1.5
58	<i>Avena fatua</i>	Cunvovalaceae	Jawdar	Increase the milk in animal	0.83	0.7	1.0
59	<i>Hordeum vulgare</i>	Poaceae	Wabashay	It is used commonly in soups, breads, as well as health products and also use as a fodder for cattle's and an alcoholic beverage	0.58	0.9	0.8
60	<i>Hedera nepalensis</i>	Araliaceae	Parwatai	It is used for the treatment of diabetes and also important food for animal	0.75	0.7	0.8
61	<i>Tribulus terrestris</i>	Zygophyllaceae	Markondai	It is commonly used to increase libido, maintain the urinary tract strong as well as decrease swelling	0.41	0.7	1.2
62	<i>amaranthus viridis</i>	Amranthaceae		Leaves are cooked as vegetable	0.83	0.8	0.7
63	<i>Visnaga daucoides</i>	<u>Apiaceae</u>	Sperkai	It is used for the treatment of angina, atherosclerosis, colic, coughs, asthma and diabetes	0.83	0.9	0.7
64	<i>Funiculum vulgare.</i>	Apiaceae		It is used as digestive, carminative, diuretic galactagogue also used for treatment of gastrointestinal as well as respiratory disorder	0.83	0.5	2.0
65	<i>Coriandrum sativum</i>	Apiaceae	Dhaniya	It is used for treatment of digestion troubles, nausea, hernia spasms, diarrhea, bowel as well as intestinal gas. It is also used to treat toothaches, hemorrhoids, worms, measles as well as joint pain etc.	1.33	0.6	2.1
66	<i>Nerium oleander</i>	Apocynaceae	Ganderay	: It used for asthma, cancer, leprosy, painful menstrual periods, ringworm, epilepsy, indigestion, as well as venereal disease	1	0.8	0.5
67	<i>Calotropis procera</i>	Apposynaceae	Spalamai	Used animals for external parasites (Kone) in cows and	0.41	0.8	1.8

				buffalo			
68	<i>Periploca aphylla</i>	Aizoaceae	Barara	Use as ornamental purposes and use as ornamental purposes	2	0.8	0.7
69	<i>Achillea millefolium</i>	Asteraceae	Karkara	People masticate the clean foliage to reduce toothache and the ground part is use in medicine.	1.41	0.8	1.6
70	<i>Artemisia vulgare</i>	Polygonaceae	Tarkha	It is used to motivate bile secretion as well as gastric juice. It is also used for the treatment of epilepsy as well as hysteria in broods	0.58	0.7	0.6
71	<i>Portulaca umbraticola</i>	Portulacaceae	Warkharay	Use as vermifuge, antiseptic, antioxidant, anti-inflammatory, antiulcerogenic as well as wound-healing	1.58	0.8	2.7
72	<i>Zizania palustris</i>	Lamiaceae	Karkanda	Use as a source of fodder for animals	0.41	0.6	1.7
73.	<i>Malus Pumila</i>	Rosaceae	Manra	The fruit is said to dispel gas, dissolve mucous, cure flux also be a stimulant for anemia, bilious disarrays as well as colic	0.83	0.8	1.9
74.	<i>Monothecha buxifolia</i>	Sapotaceae	Gwargwara	: It is used for the treatment of laxative, hematinic, antipyretic and anti-helminthic	0.83	0.6	1.4
75.	<i>Sonchus asper</i>	Asteraceae	Shodapai	The extraction is used for the cure of skin and other disease.	0.58	0.7	1.3
76.	<i>Argemone mexicana</i>	Papaveraceae	RediGul	It is use as a diuretic, painkiller as well as anti-inflammatory. The seed oils are also used pomade and purgative. The leaf infusion drunk to relieve cough	0.75	0.9	1.4
77.	<i>Astragalus graveolens</i>	Fabaceae	Azghay	It is use as a natural dietary supplement and also used to treat diabetes, fibromyalgia and common cold	0.41	0.8	1.8
78	<i>Malus pumila</i>	Rosaceae	Manra	The fruit is said to dispel gas, dissolve mucous, cure flux also be a stimulant for anemia, bilious disarrays as well as colic	0.83	0.9	1.4
79	<i>Dodonea viscosa</i>	Spindaceae	Ghwaraskay	Used for fuel and treatment of fungal infections	0.83	0.9	1.5
80	<i>Brassica campestris</i>	Brassicaceae	Sharsham	Used fodder for animals	0.83	0.5	0.9
81	<i>Urtica dioica</i>	Urticaceae	Seezonkay	: It is used for the treatment of back pain well as arthritis.	1.33	0.5	1.4
82	<i>Mentha arvensis</i>	Lamiaceae	Podina	Used in salat and also for stomach problems	1.0	0.6	0.7
83	<i>Melia azedarach</i>	Meliaceae	Hindustani Shandai	Used for making furniture, timber	0.41	0.4	1.2
84	<i>Carthamus oxyacanthus</i>	Asteraceae	Kareza	It is used to treat biliousness	2.0	0.6	1.1
85	<i>Berberis vulgaris</i>	Berberidaceae	Kwaray	It is used to cure cough, fever, depression, hyperglycemia, bleeding and hyperlipidemia	1.41	0.6	0.7
86	<i>Alnus nitida</i>	Betulaceae	Geeray	It is used for tanning as well as dyeing purposes	0.58	0.6	0.7
87	<i>Nasturtium microphyllum</i>	Brassicaceae	Tarmeera	Use as a food and fodder for animals. It is also used as an expectorant, diuretic, stimulant and purgative etc.	1.58	0.7	1.0
88	<i>Luffa cylindrica</i>	Eupharbiaceae	Toorai	Locally its Latex are poisonous and cause swelling on skin	0.41	0.9	0.6
89	<i>Momordica charantia</i>	Characeae	Karila	It is used for the treatment of fever, diabetes and infections. It is also used as food	0.83	0.7	0.5
90	<i>diospyros lotus</i>	Ebenaceae	Tore Amlook	It is used as an anti-diabetic, astringent, antiseptic, nutritive,	0.83	0.7	0.5

				sedative, antitumor, antipyretic, laxative as well as nutritive.			
91.	<i>Euphorbia helioscopia</i>	Euphorbiaceae	Mandaroo	It is used for breathing disarray containing bronchitis, asthma as well as chest jamming.	0.58	0.8	0.5
92.	<i>Quercus baloot</i>	Fagaceae	Sirai	used as a tea for colds, diarrhea, cough, fever as well as bronchitis	0.75	0.9	0.7
93.	<i>Ailanthus altissima</i>	Simaroubaceae	Bakanra	is used for the treatment of fast heart rate, asthma, cramps, diarrhea, epilepsy	0.41	0.5	0.6
94.	<i>Juglan regia</i>	Juglandaceae	Ghooz	Used in quality furniture and carving	0.83	0.6	0.6
95.	<i>Rumix dentatus</i>	Lamiaceae	Shalkhay	Leaves are useful for treating digestive problems in both animal and human	0.83	0.8	1.0
96.	<i>Viola canescens</i>	Violaceae	Guli Binafsha	Use for the treatment of flu, fever, cough, cold as well as malaria. It is also use as anti-cancerous drug	0.83	0.8	1.0
97.	<i>Rosa webbiana</i>	Rosaceae	Jangli Gulab	It is use as a food and also use for the treatment of stomach aches as well as jaundice.	1.33	0.8	0.6
98.	<i>Verbasum thapsus</i>	Scrophulariaceae	Khar Ghwag	It is used for the treatment of asthma, inflammatory diseases, pulmonary problems, diarrhea, spasmodic, coughs as well as migraine headaches	1.0	0.8	1.1
99.	<i>Rumex hastatus</i>	Polygonaceae	Aranda	used as a fuel and fodder for animals	0.41	0.7	1.0
100.	<i>Swertia cherayita</i>	Gentianaceae	Swertiacherayita	It is traditionally use for the treatment of malaria, liver disorders as well as diabetes.	2.0	0.8	1.0
101.	<i>Withania somnifera.</i>	Solanaceae	Marwandai	It is use as a medicine traditionally	1.41	0.6	0.7
102.	<i>Iris germanica.</i>	Iridaceae	Qabar Gulay	It is use in medicine and perfume	0.58	0.8	1.0
103.	<i>Iris sisyrinchium.</i>	Iridaceae	Gandechar.	Use as ornamentally and root tea used for diarrhea,	1.58	0.6	0.7
104.	<i>Xanthium strumariem</i>	Asteraceae	Geeshkay	It is used in Chinese remedy to cure respiratory allergies, chronic nasal obstructions, sinus congestion as well as nasal discharges.	0.41	0.7	0.9
105.	<i>Teucrium stocksianum</i>	Lamiaceae	Yakhandaz	Use as ornamental plants	0.83	0.9	0.9
106.	<i>Punica granatum</i>	Lythraceae	Anar	People use pomegranate for diabetes, athletic performance, high blood pressure and heart disease.	0.83	0.8	1.2
107.	<i>Iris germanica</i>	Iridaceae	Guli Zambaq	Root was mostly utilized in Macedonia and perfumery. Flowers are also used for color as well as flavor	0.58	0.9	0.7
108.	<i>Ajuga bracteosa</i>	Lamiaceae	Gooti	It is used in the curing of agues. The root juice is utilized in the treatment of dysentery as well as diarrhea.	0.75	0.9	1.1
109.	<i>Ajuga parviflora</i>	Lamiaceae	Gooti	It is used in the curing of agues. The root juice is utilized in the treatment of dysentery as well as diarrhea	0.41	0.5	0.9
110.	<i>Abelmoschus esculentus</i>	Malvaceae	Bhindi	Itis use as a food and seed is used as cordial, antispasmodic as well as stimulant	0.83	0.5	0.6

111.	<i>Allium griffithianum</i>	Amaryllidaceae	Ogakai	It is used to treat hyperlipidemia, hypertension as well as for avoiding cardiovascular disease	0.83	0.6	0.7
112.	<i>Broussonetia papyrifera</i>	Moraceae	Gul Toot	Fruits are edible and also use to treat diuretic, vulnerary, tonic and Astringent.	0.83	0.4	2.0
113.	<i>Eucalyptus globules</i>	Myrtaceae	Lachi	Its wood is used for fuels	1.33	0.6	0.8
114.	<i>Veronica ciboria</i>	Verbenaceae	Shumakay	Its leaves boil in water ten use for the treatment of fever and acne	1.0	0.6	1.0
115.	<i>Narcissus tazetta</i>	Amaryllidaceae	Guli Gangas	It is use as a food and also use for curing of disarray of the, cardiovascular system, respiratory tract, nervous system as well as metabolism	0.41	0.6	1.8
116.	<i>Origanum vulgare</i>	Lamiaceae)	GharKashmaly	It used as a food as well as a remedial plant	2.0	0.7	0.8
117.	<i>Lathyrus aphaca</i>	Fabaceae	Koorkaman	It is use as a food and also use to treat toothache and wound.	1.41	0.9	1.6
118.	<i>Cedrella serrata</i>	Meliaceae	Shenai	It is used for antimicrobial purposes also against infection as well as liver diseases	0.58	0.7	1.7
119.	<i>Funiculum vulgare</i>	Apiaceae	Kagelanay	It is used as digestive, carminative diuretic and lacteous also in curing of gastrointestinal as well as respiratory disorders	1.58	0.7	0.7
120.	<i>Cucurbita maxima</i>	Cucurbitaceae	Kadoo	Use as a vegetable	0.41	0.8	0.9
121.	<i>Papaver pavoninum</i>	Papaveraceae	Raiday	It is used for the treatment of diarrhea and seed use to cure inflammation.	0.83	0.9	0.8
122.	<i>Caralluma edulis</i>	Apocyna	Pamankay	Use as vegetables and traditional medicine	0.83	0.5	0.7
123.	<i>Pinus roxburghii</i>	Pinaceae	Nakhtar	The wood is used for fuels, furniture and shelter	0.58	0.6	0.9
124.	<i>Myrtus communis</i>	Myrtaceae	Manrho	Leaves are used for cold as well as for stomach disorders.	0.75	0.8	1.8
125.	<i>Mentha longifolia</i>	Lamiaceae	Enaly	Leaf extract used against vomiting and dysentery	0.41	0.8	0.9
126.	<i>Acacia nilotica</i>	Mimosaceae	Kikar	Used for house construction, agricultural tools and fuel	0.83	0.8	0.8
127.	<i>Juglans regia</i>	Juglandaceae	Ghuz	use for the cleaning teeth infection. Nuts is edible and nutritive	0.83	0.8	0.6
128.	<i>Chenopodium album</i>	Amaranthaceae	Sarmay	used as vegetables.	0.83	0.7	0.6
129	<i>Lycopersicum esculentum</i>	Solanaceae	Tamater	Food	1.33	0.8	0.5
130.	<i>Nasturtium officinale.</i>	Brassicaceae	Tarmera	Cooked as vegetable. Cooked herb is used in tetanus	1.0	0.6	0.7
131.	<i>Osmium bacilicum</i>	Lamiaceae	Kashmalay	Used for external wounds, leaves are also used as expectorant	0.41	0.8	0.8
132.	<i>Morus alba L</i>	Moraceae	Thooth	Fodder for cattle	2.0	0.6	0.7
133.	<i>Vitis vinifera</i>	Vitaceae	Kwar	Join pain	1.41	0.7	0.6
134.	<i>Avena sativa</i>	Poaceae	Jawder	Fodder and fuel	0.58	0.9	0.9
135.	<i>Cupressus sempervirens</i>	Cupressaceae	Sarwa	Anthelmintic and astringent	1.58	0.8	0.7
136.	<i>Morus nigra</i>	Moraceae	Tor thooth	Wood	0.41	0.9	0.8

137.	<i>Rumex dentatus</i>	Polygonaceae	Shalkhay	Cook as vegetables as well as used to treat constipation	0.83	0.9	0.8
138.	<i>Sorghum halepense</i>	Poaceae	Dadam	Fodder for cattle,	0.83	0.5	1.3
139.	<i>Mirabilis jalapa</i>	Nyctaginaceae	Gulabasi	wounds to get heal. Use as an ornamental.	0.58	0.5	0.9
140.	<i>Spinacia oleracea</i>	Chenopodiaceae	Palak	Leaves are edible and are used for vegetables	0.75	0.6	1.1
141.	<i>Abelmoschus esculentus</i>	Malvaceae	Bindy	vegetable and fuel	0.41	0.4	1.4
142.	<i>Dalbergia sissoo</i>	Fabaceae	Shawa	Its wood is use as a source of furniture and fuel	0.83	0.6	1.5
143.	<i>Dichanthium annulatum</i>	Poaceae	Shamogha	It is used as fodder for various animals.	0.83	0.6	1.0
144.	<i>Digera arvensis</i>	Amaranthaceae	Surgulay	Vegetable and fodder	0.83	0.6	0.8
145.	<i>Cucumis sativus</i>	Cucurbitaceae	Badrang	Fruits are edible	1.33	0.7	0.8
146.	<i>Capsicum annum</i>	Solanaceae	Marchaky	Anti-helminthic	1.0	0.9	1.2
147.	<i>Zea mays</i>	Poaceae	Jewar	fodder	0.41	0.7	0.7
148.	<i>Helianthus annus</i>	Asteraceae	Anwerfarasat	Oil	2.0	0.7	0.7
149.	<i>Tagetes erecta</i>	Asteraceae	Dambergulay	It is grown in lawns for ornaments	1.41	0.8	2.0
150.	<i>Broussonetia papyrifera</i>	Moraceae	Gul tooth.	Fodder	0.58	0.9	2.1
151.	<i>Citrus limon</i>	Rutaceae	Nembo	Use as fuel. Its leaves are used for treating vomiting	1.58	0.5	0.5
152.	<i>Salvia moorcroftiana</i>	Lamaiaceae	Khardug	The boiled root extract is used for internal injuries of cattle	0.41	0.6	1.8
153.	<i>Sisymbrium irio</i>	Brassicaceae	Genger	use as a source of fuel when dried	0.83	0.8	0.7
154.	<i>Ricinus communis</i>	Euphorbiaceae	Randa	Generally, its wood is used as a fuel	0.83	0.7	1.6
155.	<i>Triticum aestivum</i>	Fabacea	Ghanam	Use for food and fodder.	0.58	0.7	0.6
156.	<i>Fumaria parviflora</i>	Papaveraceae	Shatara	use as a fodder for animals	0.75	0.7	2.7
157.	<i>Plantago lanceolata</i>	Plantaginaceae	Ghawajabai	use for the treatment of dysentery, constipation and expectorant	0.41	0.9	1.7
158.	<i>Prunus amygdalus</i>	Rosaceae	Badam	use as a fuel and enhance memory of people	0.83	0.7	1.9
159.	<i>Malva neglecta</i>	Malvaceae	Panderak	They can be added in quantity to salads, and make an excellent lettuce substitute, they can also be cooked as greens. People find this mucilaginous texture unpleasant,	0.83	0.6	1.4
160.	<i>Papaver somniferum</i>	Papaveraceae	Koknar	use for headache, dysentery and tonic	0.83	0.5	1.3
161.	<i>Alternanthera pungens</i>	Amaranthaceae	Insut	Fodder	1.33	0.7	1.4
162.	<i>Rosa moschata</i>	Rosaceae	Zangligulab	Dysentery, sexual problem	1.0	0.5	1.8
163.	<i>Ziziphus oxyphylla</i>	Rhamnaceae	Elani	Antibiotic	0.41	0.5	1.4

6. REFERENCES

- Abbasi, A.; Mir, A.; Nadeem, M.H. "Ethnobotanical Survey of Medicinally Important Wild Edible Fruits Species Used By Tribal Communities of Lesser Himalayas-Pakistan." *Journal of ethnopharmacology*. 2013, 148, (2), 528-536.
- Ahmad, I.; Mohammad, I.; Niaz, A. "Ethnobotanical Study of Tehsil Kabal, Swat District, KPK, Pakistan." *Journal of Botany*, 2011, (2), 11.
- Ajaib, M.; Muhammad, I.; Khizar, H.; Iqbal, H.; Mehwish, M.; Tanveer, H.; Waheeda, M. "Inventorization of Traditional Ethnobotanical Uses of Wild Plants of Dawarian And Ratti Gali Areas of District Neelum, Azad Jammu And Kashmir Pakistan." *PLOS one*, 2021, 16, 7.
- Farooq, S.; Amirullah, B.; Mohammad, Y.; Hina, F. "Ethnobotanical Studies of The Flora of Tehsil Birmal in South Waziristan Agency, Pakistan." *Pakistan journal of weed science research*, 2012, 18, 3.
- Hossain, M.; Sanower, A.; Amit, D.; Asif, A.; Anwarul, M.; Idris, A.; Bey, G.; Zannat, U.; Moklesur, S.; Long, M. "A Review of Ethnobotany, Phytochemistry, Antimicrobial Pharmacology And Toxicology of *Nigella sativa* L." *Biomedicine & Pharmacotherapy*, 2021, (143), 112-182.
- Hussain, S.; Wahid, H.; Ashiq, N.; Lal, B.; Ashgar, Ali. "Quantitative Ethnomedicinal Study of Indigenous Knowledge on Medicinal Plants Used by the Tribal Communities Of Central Kurram, Khyber Pakhtunkhwa, Pakistan." *Ethnobotany Research and Applications*, 2022, (23),1-31.
- Irfan, M; Kamil, M.; Nabeela, Niaz, A.; Arshad, A.; Ullah, M. "Ethnomedicinal Applications of Plant Taxa By The Local Communities of Tehsil Adenzai, District Lower Dir, Khyber Pakhtunkhwa, Pakistan." *International Journal of Bioscience* 2018, 13, 5, 40-49.
- Kamran, M.; Rehana, K.; Shakir, U.; Siraj, K.; Muhammad, F.; Haroon, U.; Muhammad, K.; Mujeeb, R. "Taxonomic Distribution of Medicinal Plants For Alzheimer's Disease: A Cue to Novel Drugs." *International Journal of Alzheimer's Disease*, 2020,1-15.
- Kayani, S.; Mushtaq, A.; Muhammad, Z.; Shazia, S. "Ethnobotanical Uses of Medicinal Plants For Respiratory Disorders Among The Inhabitants of Gallies-Abbottabad, Northern Pakistan." *Journal of ethnopharmacology*, 2014, 156, 47-60.
- Khan, A.; Syed, G.; Farrukh, H.; Muffakhira, D. "Ethnobotany of Gokand Valley, District Buner, Pakistan." *Pakistan Journal of Biology Science*, 2003, 9, 63-62.
- Khan, S.; Gul, J.; Hameeda, B.; Jan, S.; Shakir, U. "Phytochemical Screening and Antimicrobial Activity of the Cichorium Intybus (Family Asteraceae) and Medicago Sativa (Family Fabaceae) Peshawar." *Pakistan. Journal Pharmacognosy Phytochemistry*, 2018, 3,603-616.
- Murad, W.; Azizullah, A.; Muhammad, A.; Akash, T.; Kalim, K.; Saqib, W.; Ashfaq, A. "Ethnobotanical Assessment of Plant Resources of Banda Daud Shah, District Karak, Pakistan." *Journal of ethnobiology and ethnomedicine*, 2013, 9, 1-10.
- Shah, A; Lal, B.; Murad, M.; Sumbal, K.; Muhammad, A.; Naushad, Khan.; Rainer, W. "Quantitative Study On The Trade And Ecological Aspect of Spice Plants In The Markets of District Bannu, Khyber Pakhtunkhwa, Pakistan." *Ethnobotany Research and Applications*, 2021, 22, 1-21.
- Shakir, L.; Shakir, U.; Mohammad, S.; Rihan, U.; Muhammad, S. "Phytochemical Analysis, Antipyretic and Antifungal Activities of *Solanum nigrum* L." *National Journal of Pharmaceutical Sciences*, 2023, 3(2), 06-12.
- Shuaib, M; Sajjad, A; Kashif, A; Muhammad, I; Firasat, H; Zara, U; Syed, S. "Ethnobotanical and Ecological Assessment of Plant Resources at District Dir, Tehsil Timergara, Khyber Pakhtunkhwa, Pakistan." *Acta Ecologica Sinica*, 2019, 39,1,109-115.
- Ullah, S.; Said, A; Ihtisham, H.; Ikram, U.; Rizwana, B.; Asghar, A.; Yaseen, K.; Muhammad, S. Ethnobotanical Study of Village Darangal Kambat Tehsil Samarbagh, District Dir Lower, Khyber Pakhtunkhwa Pakistan "*Journal of Agriculture & Forestry Research*." 2023, 2. 5.
- Ullah, S.; Zakir, U.; Javeed, I.; Fozia, A.; Siraj, K.; Muhammad, S.; Mohsin, I. Traditional Uses of Plants And Its Role In The Community Development of Sheen Ghar Valley District Dir Lower Khyber Pakhtunkhwa Pakistan "*International Journal of Agriculture and Nutrition*. 2021, 3,1.
- Ullah, S.; Begam, L.; Ullah, Z.; Naz, R.; Ihsan, M.; Abasi, F.; Ecological Study of Different Community's Site From District Karak Khyber

- Pakhtoon Khwa Pakistan. *International Journal of Research in Agronomy*, 2019, 2(1), 12-16.
- Ullah, S; Gul, J.; Farzana, G.; Siraj, K.; Jan, S. "Antifungal and Phytochemical Screening of Selected Medicinal Plants of Malamjaba, Swat, Pakistan." *The Pharma Innovation*, 2018, 7, 5, 176.
- Ullah, S; Gul, J; Farzana, G; Siraj, K; Jan, S. "Antifungal, Nutritional and Phytochemical Investigation Of *Asplenium Dalhousie* of District Dir Lower, Pakistan." *Journal of Pharmacognosy and Phytochemistry*, 20187, 2, 3281-3288.
- Ullah, S; Gul, J; Farzana, G; Siraj, K; Jan, S. Maria, K; Hameeda B. "Phytochemistry, anti-inflammatory and antipyretic activities of *Adiantum capillus-veneris* in Swiss albino mice." *International Journal of Fauna and Biological Studies*, 2018, 5, 3, 19-25.
- Ullah, S; Gul, J; Farzana, G; Siraj, K; Maria, K; Hamida. "Phytochemical Analysis, Antipyretic And Antifungal Activities of *Cyrtomium Caryotideum*." *Biosciences Biotechnology Research Asia*, 2018, 15, 3, 577-589.
- Ullah, S.; Lubna, S.; Rihan, U. "Morphological and Phytochemical Study of *Cirsium Arvense* from District Mardan Pakistan." *Journal of Bioinformatics Biotechnology Research*, 2023, 1, 1, 1-7.
- Ullah, S; Maria, K; Fozia, A; Mohammad, S; Mohsin, I; Rizwan, U. "Antifungal, Nutritional and Phytochemical Investigation of *Actiniopteris Radiata* of District Dir Lower, Pakistan." *Journal of Pharmacognosy and Phytochemistry*, 2018, 7, 2, 3281-3288.
- Ullah, S.; Rehan, U.; Lubna, S.; Rizwan, Ullah. "Cheek list of ethno botanical plants of tehsil colony, Samarbagh, District Dir lower, Khyber Pakhtunkhwa Pakistan." *Journal of Agriculture & Forestry Research*, 2023, 2,3.
- Yaseen, G.; Mushtaq, A.; Shehla, S.; Daniel, P.; Muhammad, Z.; Guolin, Z.; Zabta, K.; Shazia, S. "Medicinal Plant Diversity Used For Livelihood of Public Health In Deserts And Arid Regions of Sindh-Pakistan." *Pakistan journal of botany*, 2019, 51, 2, 2409-2419.