Research Article

Ethnobotanical study of subtropical hills of Darazinda, Takht-e-Suleman range F.R D.I. Khan, Pakistan

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Abstract

The present study contributes to ethnobotanical information of Darazinda (Frontier Region) D.I. Khan, Khyber Pakhtunkhwa, Pakistan. A Total of 198 plant species belonging to 62 families were recorded, in which Poaceae (35), Asteraceae (20), Solanaceae (12), Brassicaceae and Papilionaceae each 8, Amaranthaceae 6, Boraginaceae, Chenopodiaceae, Cucurbitaceae and Euphorbiaceae 5 each, Asclapodiaceae, Polygonaceae 4 each, Malvaceae, Mimisiaceae, Apiaceae, Cyperaceae, Rhamnaceae, Myretaceae, Moraceae, Verbanaceae, Zygophyllaceae, Scorphulariaceae and Laminaceae 3 each were recorded. The other families possessed 2 or fewer species. Locally these plants are used for agriculture applications (2%), fodder (65%), as a fuel (15%), for making furniture (4%), fruit yielding (6%), as medicinal (55%), as timber (5%), as vegetable (13%) and fencing plants (4%).

Key words: Ethnobotany; Darazinda; Medicinal plant; Vegetable; Timber; Fencing plant; Fodder; F.R. D.I. Khan

Introduction

Darazinda F.R. D.I. Khan is a small Frontier Region of Pakistan. It is also known as Largha Shirani. The area is located between North latitude 31-30° and 31-34° and West longitudes 69.55° and 70.24°. Total area of this region is 3,229 square kilometers. On the North, it is bounded by South Waziristan Agency, on the east by Kulachi, on the South by Musa Khel and Dera Ghazi Khan (Punjab) and on the West by Zhob (Baluchistan) (Figure 1). In this tribal area, there are no urban localities. Darazinda and

Daraban (an adjacent area) are Persian words and are linked to Dara Shikoh, one of the sons of Mughal king Shah Jahan. "Daraban" means Dara's forest, because Dara used to visit the forests of the area for hunting, while "Darazinda" means prison of Dara, where Dara had established a prison. The Western part of this area is composed of Koh-e-Suleman Mountains, while on the eastern side, at lower altitude lies areas like Bargholay, Angharghara, Pasta, Spin ghar and Sur ghar hills. In the Western range a number of peaks of over 2,750 meter are

present. The highest peak is Takht-e-Sulemanis (3,441meters). The eastern hills have an average height of 700m.

Ethnobotanical survey helps to open new avenues for research on scientific times to explore new drugs for treatment of various ailments. Ethnobotanic knowledge has been acquired by local people from centuries of indigenous knowledge by hit and trail method and it is passed from generation to generation. This knowledge provides the starting point to investigate a plant for possible therapeutic effect on scientific basis. Rich phyto diversity of Darazinda consists of large number of plants species, majority of which are used medicinally by the local people who have very limited modern medical facilities. Majority of the population of this area depends upon plant resources as no other jobs are available in the area. Rearing of cattle is good source of food and income of local inhabitants. Wood is used for fuel and the people are dependent on forest resources for first hand money. Grazing of cattles, sheeps, goats, camels, cows are also prominent in this area. Different workers have carried out studies of plant resources of different areas of Pakistan e.g. Sher and Hussain [1] conducted ethnobotanical survey on the medicinally and economically important plants of Malam Jabba valley, District Swat and reported 50 species of plants belonging to 33 families as ethno botanically important Saima *et al.* [2] collected 167 plants belonging to 65 families from national park of Ayubia, Abbottabad. Fazal *et al.* [3] collected 211 species of 66 families from District Haripur, Nasrullah *et al.*, [4] reported 67 plants species, belonging to 39 families of Jandool valley, Dir lower, Barkatullah and Ibrar [5] described 169 species belonging to 76 families of Malakand Pass Hills, District Malakand,

Marwat *et al.*, [6] reported 11 wild edible fruit plants species belonging to 8 families from Dera Ismail Khan District, Naveed *et al.*, [7] reported 110 species belonging to 51 families from Shamshokii District Karak., Haq *et al.* [8] communicated ethno botanical uses of medicinal plants of Allai valley (Western Himalaya Pakistan) and reported that 172 taxa were locally used for various medicinal purposes; Alamgeer *et al.* [9] evaluated and documented ethnomedicinal knowledge of Alladand Dehri, Tehsil Batkhela, District Malakand and reported 92 plant species for cure of various diseases, Khan and Hussain [10] documented 161 multi-purpose species in Tehsil Takhti -e-Nasrat, Ahmad and Habib [11] collected 59 Medicinal Plants of Himalaya Region, Dawarian Village, Neelum Valley, Azad Jammu and Kashmir, Hussain *et al.*, [12] documented 69 plant species belonging 29 families and reported plant cover, density and frequency of plants from Chakwal. Arshad *et al.*, [13] Studied vegetation, frequency, value index, density and cover of plants of Cholistan desert, No such ethnobotanical work has been reported from this remote and neglected area of Darazinda and present study is carried out to document the ethnobotanical knowledge of this area.

Materials and method

Frequent visits of the research area at various seasons were carried during 2013-2014 in order to collect plants and get ethnobotanical information from knowledgeable people and elders of the area by a questionnaire. Identification of plants was carried out with the help of Flora of Pakistan [14, 15], and from the herbarium of Botany Department, University of Peshawar, Pakistan. The identified plants were given voucher numbers and deposited in the Botany department herbarium, University of Peshawar for ready reference.

Figure 1. Map of Darazinda F.R. D.I. Khan

Results and discussion

In the present work a total of 203 plant species have been reported which were mainly used as fodder, medicinal, fuel, fencing, and vegetable and for agriculture tools making. In Figure 2 the ethnobotanical profile of the various plants of the area has been represented graphically. Most of the plants (65%) of the area are used as a fodder followed by the medicinal plants (55%), which are used by the local inhabitants as home remedies for their therapeutically

active constituents. Nearly 15 % plant species are used by the locals as fuel wood and 13 % plants as vegetables. Fruit and timber producing trees are 6% and 5%, respectively. 4% plants are used for furniture making while 3.5% plants are for fencing. Only a smaller number of plants (2%) are used for agriculture tools making. (Figure 3 to Figure 8) is the good illustration of the various uses of different plants in daily life of the area inhabitants.

Figure 2. Graphical representation of ethnobotanical profile

Figure 3. Female carrying wood for fuel

Figure 4. Wood used as fencing as well as fuel

Figure 5. Plants used for thatching

Figure 6. Fuel wood

Figure 7. Plants to be used for multipurpose

Figure 8. Plants used for nesting

Fodder utilization

The results are given in table 1, which show that a 129 (65%) were used as fodder. *Acacia modesta*, *Achreche racemosa*, *Albizia lebbeck*, *Apluda mutica*, *Aristida*

adscensionis, *Argyrolobium roseum*, *Astragalus psilocentros*, *Bromus japonica*, *Chenopodium album*, *Chenopodium murale*, *Convunvulus arvensis*, *Cymbopogon jwarancusa*, *Cynodon dactylon*,

Dichanthium annulatum, *Echinochloa colona*, *Eragrostis minor*, *Hordeum vulgare*, *Iphiona grantoides*, *Lactuca serriola*, *Lepidium draba*, *Lolium temulentum*, *Morus alba*, *Pennisetum oriantale*., *Phalaris minor*, *Plantago lanceolata*, *Saccharum bengalensis*, *Rhazya stricta*, *Salvadora persica*, *Sonchus asper*, *Stellaria media*, *Taraxacum officinale*, *Tribulus terrestris*, *Zizyphus mauritiana*, *Zizyphus oxyphylla* were used as fodder by local cattles (Goat, sheep, cow and camel), which caffer their meat and dairy product needs. These cattles are also source of income by selling out them and their milk and wool. Similar results were shown by Ibrar *et al.* [16] reported 37 forage species from Ranyal hill, Shangla District. Dilshad *et al.* [17] investigated 25 fodder species similar to this study which used for diseases cure of cattle. Sardar and Khan [18] also reported many species used as fodder. Barkatullah *et al.* [19] recorded 18 forage species from Charkotli Hills of District Batkhela. Sher *et al.* [20] studied 66 plant species used as fodder from Chagharzai Valley, Buner District, Pakistan.

Medicinal utilization

Result showed that 108 (55%) plants were used medicinally like *Acacia nilotica*, *Acacia modesta*, *Achyranthus biclentata*, *Achyranthus aspera*, *Agaricus campestris*, *Albizia lebbeck*, *Allium cepa*, *Allium sativum*, *Amaranthus viridis*, *Astragalus psilocentros*, *Artemisia scoparaia*, *Calligonum polygonoides*, *Caralluma tuberculata*, *Cannabis sativus*, *Capparis spinosa*, *Carthamus oxycantha*, *Capsicum annum*, *Chenopodium album*, *Cordia maxia*, *Coriandrium sativum*, *Cucumis sativus*, *Cucurbita maxima*, *Cucurbita pepo*, *Cuscuta reflexa*, *Dalbergia sissoo*, *Datura alba*, *Dodonaea viscosa*, *Eucalyptus globules*, *Euphorbia prostate*, *Fagonia cretica*, *Foeniculum valgare*, *Helianthus annus*, *Peganum harmala*, *Pennisetum*

oriantale, *Phoenix dactylifera*, *Portulaca quardrifida*, *Raphanus sativus*, *Salvadora persica*, *Tamarix aphylla*, *Withania coagulans*, *Zizyphus oxyphylla*, *Zizyphus nummularia* were locally used as medicinal plants. *Fagonia cretica* is widely used to cure various diseases including skin diseases, while *Salvadora persica* is used for cureness of female diseases. Medicinal uses of other plants are given in table 1. Similar results were obtained by Sher and Hussain [1] they reported 50 medicinal plants species of 30 families from Malam Jaba. Ullah *et al.* [21] reported traditional 34 medicinal plant species from Darra Adam Khel KPK, Pakistan. Jan *et al.* [22], Sher *et al.* [20] and Mahmood *et al.* [23] also carried out medicinal plants study of different areas of the country. Similar work also reported from Tehsil Karak by Khan *et al.*, [24] and from Tehsil Takht-e-Nasrati by Khan *et al.*, [25], Bonet *et al.* [26] and Ajaib *et al.* [27].

Fuel utilization

The result showed that 30 (15%) plants were used as fuel in this area. *Acacia nilotica*, *Acacia modesta*, *Albizia lebbeck*, *Calligonum polygonoides*, *Cymbopogon jwarancusa*, *Dalbergia sissoo*, *Desmostachya bipinnata*, *Dodonaea viscosa*, *Eucalyptus globules*, *Eucalyptus lanceolatus*, *Melia azedarach*, *Morus nigra*, *Periploca aphylla*, *Phoenix dactylifera*, *Phylla nodiflora*, *Tamarix aphylla*, *Zizyphus oxyphylla*, *Zizyphus mauritiana*, *Zizyphus nummularia* etc are used as fuel. Figure 2 showing females of the area carrying wood for fuel). Similar studies were carried out by Sher *et al.* [20] reported 51 wood species used as fuel from Chagharzai Valley, Buner District, Pakistan. More than 80% of the hilly area people depend upon the surrounding hills for collection of fuel plants. Deka *et al.* [28], Ajaib *et al.* [27] also reported similar results.

Table 1. Presented plant families/species, fodder, medicinal, fuel, vegetables, fruit yielding, timber, furniture, fencing and agriculture appliances

S. No.	Plant families/species	Fodder	Medicinal	Fuel (dried plants)	Vegetables	Fruit yielding	Timber	Furniture	Fencing plants	Agriculture appliances
A. PTERIDOPHYTA										
1. Equisetaceae										
1	<i>Equisetum arvense</i> L.	+	-	-	-	-	-	-	-	-
2. Adiantaceae										
2	<i>Adiantum capillusveneris</i> L.	-	-	-	-	-	-	-	-	-
B. Fungi										
3. Agaricaceae										
3	<i>Agaricus campestris</i> L.	-	+	-	-	-	-	-	-	-
4. Helveliaceae										
	<i>Morchella esculenta</i> Fries	-	-	-	-	-	-	-	-	-
C. MONOCOTYLEDONS										
5. Alliaceae										
4	<i>Allium sativum</i> L.	-	+	-	+	-	-	-	-	-
5	<i>Allium cepa</i> L.	-	+	-	+	-	-	-	-	-
6. Arecaceae										
6	<i>Nannorrhops ritchiana</i> H. Wendl.	+	-	-	-	-	-	-	-	-
7	<i>Phoenix dactylifera</i> L.	+	+	+	-	+	+	+	+	-
7. Asparagaceae										
8	<i>Asparagus gracilis</i> Royle	+	-	-	-	-	-	-	-	-
8. Cyperaceae										
9	<i>Cyperus elumoids</i> L.	+	-	-	-	-	-	-	-	-
10	<i>Cyperus rotundus</i>	+	-	-	-	-	-	-	-	-
11	<i>Eleocharis palustris</i> (L.)	+	-	-	-	-	-	-	-	-
9. Poaceae										
12	<i>Apluda mutica</i>	+	-	-	-	-	-	-	-	-
13	<i>Achrechne racemose</i>	+	-	-	-	-	-	-	-	-
14	<i>Aristida adscensionis</i> L.	+	-	-	-	-	-	-	-	-
15	<i>Aristida cyanantha</i> Nees ex Steud	+	-	-	-	-	-	-	-	-

16	<i>Argyrolobium roseum</i>	+	-	-	-	-	-	-	-	-
17	<i>Avena fatua</i> Linn.	+	-	-	-	-	-	-	-	-
18	<i>Ardu dedonix</i>	+	-	-	-	-	-	-	-	-
19	<i>Brachiaria ramose</i>	+	-	-	-	-	-	-	-	-
20	<i>Brachiaia reptans</i>	+	-	-	-	-	-	-	-	-
21	<i>Bromus japonica</i> Thunb.	+	-	-	-	-	-	-	-	-
22	<i>Cymbopogon jwarancusa</i> (Jones) Schult.	+	-	+	-	-	-	-	-	-
23	<i>Cynodon dactylon</i> (L.) Pers.	+	-	+	-	-	-	-	-	-
24	<i>Cenchrus ciliaris</i> L.	+	-	-	-	-	-	-	-	-
25	<i>Dinebra retroflexa</i>	-	+	-	-	-	-	-	-	-
26	<i>Disteria cilians</i>	-	+	-	-	-	-	-	-	-
27	<i>Desmostachya bipinnata</i> (L.) Stapf.	-	+	+	-	-	-	-	-	-
28	<i>Dactyloctenium carstatum</i>	+	-	-	-	-	-	-	-	-
29	<i>Dactyloctenium aegyptium</i> (L.) Willd.	+	-	-	-	-	-	-	-	-
30	<i>Dichanthium annulatum</i> (Forssk.) Stapf	+	-	-	-	-	-	-	-	-
31	<i>Eragrostis minor</i> L.	+	+	-	-	-	-	-	-	-
32	<i>Echinochloa colona</i> (Linn.) Link	+	-	-	-	-	-	-	-	-
33	<i>Hordeum vulgare</i> L.	+	-	-	-	-	-	-	-	-
34	<i>Imperata cylindrica</i> (Linn.) Raeuschel	+	-	-	-	-	-	-	-	-
35	<i>Lolium temulentum</i> Linn.	+	-	-	-	-	-	-	-	-
36	<i>Oryza sativa</i> L.	+	+	-	-	-	-	-	-	-
37	<i>Polypogon monspeliensis</i> (L.) Desf.	+	-	-	-	-	-	-	-	-
38	<i>Phragmites karka</i> (Retz) Trin.	-	-	+	-	-	-	-	-	-
39	<i>Pennisetum orientale</i>	+	+	-	-	-	-	-	-	-
40	<i>Phalaris minor</i> Retz.	+	-	-	-	-	-	-	-	-
41	<i>Poa annua</i> Linn.	+	-	-	-	-	-	-	-	-
42	<i>Sorghum vulgare</i> (L.) Pers.	+	-	-	-	-	-	-	-	-
43	<i>Setaria vercillata</i> (L.)	-	+	-	-	-	-	-	-	-
44	<i>Saccharum bengalensis</i>	+	-	-	-	-	-	-	-	-
45	<i>Triticum aestivum</i> L.	+	+	-	-	-	-	-	-	-
46	<i>Zea mays</i> L.	+	-	-	-	-	-	-	-	-
10. Typhaceae										
47	<i>Typha latifolia</i> L.	+	-	-	-	-	-	-	-	-
Angiosperm										
11. Acanthaceae										

48	<i>Dicleptera bupleuroides</i>	-	+	-	-	-	-	-	-	-
12. Aizoaceae										
49	<i>Zelays petendra</i> (L.) C. Jeffery	-	-	-	-	-	-	-	-	-
50	<i>Trianthema portulacastrum</i> L.	+	-	-	-	-	-	-	-	-
13. Amaranthaceae										
51	<i>Achyranthus aspera</i> L.	-	+	-	-	-	-	-	-	-
52	<i>Achyranthus biclentata</i>	-	+	-	-	-	-	-	-	-
53	<i>Amaranthus viridis</i> L.	+	+	-	+	-	-	-	-	-
54	<i>Aerva javanica</i> (Burn.f.) Juss	+	-	-	-	-	-	-	-	-
55	<i>Celosia cristata</i>	+	+	-	-	-	-	-	-	-
56	<i>Digera muricata</i>	+	-	-	-	-	-	-	-	-
14. Anacardaceae										
57	<i>Mengifera indica</i>	+	+	+	-	+	-	-	-	-
15. Apiaceae										
58	<i>Coriandrium sativum</i> L.	+	+	-	+	-	-	-	-	-
59	<i>Foeniculum valgare</i> Mill.	-	+	-	-	-	-	-	-	-
60	<i>Scandix pectinvenens</i>	-	+	-	-	-	-	-	-	-
16. Apocyanaceae										
61	<i>Rhazya stratica</i> Decne.	-	+	+	-	-	-	-	-	-
17. Asclepiadaceae										
62	<i>Caralluma tuberculata</i> N.E. Brown	+	+	-	+	-	-	-	-	-
63	<i>Calotropis procera</i> (Wild) R.Br.	-	-	-	-	-	-	-	-	-
64	<i>Calotropis Gigantea</i> L. R. Br.	-	-	-	-	-	-	-	-	-
65	<i>Periploca aphylla</i> Decne.	+	+	+	-	-	-	-	-	-
18. Asteraceae										
66	<i>Artemisia scoparaia</i> . Waldst & Kitam	+	+	-	-	-	-	-	-	-
67	<i>Carthamus oxycantha</i> Bieb	-	+	-	-	-	-	-	-	-
68	<i>Conyza bonariensis</i>	-	-	-	-	-	-	-	-	-
69	<i>Conyza canadensis</i> (L.) Cronquist	+	-	-	-	-	-	-	-	-
70	<i>Dendratherma indicum</i>	-	+	-	-	-	-	-	-	-
71	<i>Filago hunchwarica</i>	+	-	-	-	-	-	-	-	-
72	<i>Filago arenaria</i> (Smoljan.) Chrték & Holub	+	-	-	-	-	-	-	-	-
73	<i>Helianthus annuus</i> L.	+	+	-	-	-	-	-	-	-
74	<i>Iphiona scabra</i> DC.k	+	-	-	-	-	-	-	-	-

75	<i>Lactuca serriola</i> L.	+	+	-	+	-	-	-	-	-
76	<i>Lactuca sativa</i> L.	+	-	-	+	-	-	-	-	-
77	<i>Launaea procumbens</i> Roxb.	+	-	-	-	-	-	-	-	-
78	<i>Leucaena nudicaulis</i> (L.) Hook.	+	-	-	-	-	-	-	-	-
79	<i>Pulicaria crispa</i> (Forssk.) Oliv.	-	-	-	-	-	-	-	-	-
80	<i>Parthenium hysterophous</i> L.	-	-	-	-	-	-	-	-	-
81	<i>Sonchus asper</i> (L.) Hill.	+	+	-	-	-	-	-	-	-
82	<i>Sonchus oleraceus</i>	+	+	-	-	-	-	-	-	-
83	<i>Saussurea heteromalla</i> (D.Don.) Hand	+	-	-	-	-	-	-	-	-
84	<i>Taraxacum officinale</i> Weber	+	-	-	-	-	-	-	-	-
85	<i>Xanthium strumarium</i> L.	-	-	-	-	-	-	-	-	-
19. Boraginaceae										
86	<i>Cordia maxia</i> Linn.	+	+	-	-	-	-	-	-	-
87	<i>Cynoglossum lanceolatum</i> Forssk	+	-	-	-	-	-	-	-	-
88	<i>Ehretia obtusifolia</i>	+	-	-	-	-	-	-	-	-
89	<i>Heliotropium europaeum</i> L.	+	+	-	-	-	-	-	-	-
90	<i>Heliotropism elipticum</i> Ledeb.	+	+	-	-	-	-	-	-	-
20. Brassicaceae										
91	<i>Arabidopsis thaliana</i>	+	-	-	-	-	-	-	-	-
92	<i>Brassica rapa</i> L.	+	-	-	-	-	-	-	-	-
93	<i>Brassica oleraceae</i> L.	+	-	-	+	-	-	-	-	-
94	<i>Brassica campestris</i>	+	-	-	+	-	-	-	-	-
95	<i>Coronopus didymus</i> (L.) Smith.	+	-	-	-	-	-	-	-	-
96	<i>Lepidium draba</i>	+	-	-	-	-	-	-	-	-
97	<i>Raphanus sativus</i> L.	+	+	-	+	-	-	-	-	-
98	<i>Sisymbrium irio</i> L.	+	+	-	-	-	-	-	-	-
21. Buxaceae										
99	<i>Buxus wallichiana</i> Bail	+	-	-	-	-	-	-	-	-
22. Capparidiaceae										
100	<i>Capparis spinosa</i> L.	+	+	+	-	-	-	-	-	-
23. Cleomaceae										
101	<i>Cleome brachycarpa</i> Vahl ex DC.	-	-	-	-	-	-	-	-	-
24. Caryophyllaceae										
102	<i>Saponaria vaccaria</i>	-	+	-	-	-	-	-	-	-
103	<i>Stellaria media</i> L. Vill	-	+	-	-	-	-	-	-	-

25. Cannabinaceae										
104	<i>Cannabis sativus</i> L.	-	+	-	-	-	-	-	-	-
26. Chenopodiaceae										
105	<i>Chenopodium album</i> L.	+	+	-	+	-	-	-	-	-
106	<i>Chenopodium murale</i> L.	+	+	-	+	-	-	-	-	-
107	<i>Chenopodium nepalense</i> Colla	+	+	-	+	-	-	-	-	-
108	<i>Chenopodium ambrosioides</i> L.	+	+	-	+	-	-	-	-	-
109	<i>Suaeda fruticosa</i> Forssk. Ex J.F. Gmelin	+	+	-	-	-	-	-	-	-
27. Convolvulaceae										
110	<i>Convolvulus arvensis</i> L.	+	+	-	-	-	-	-	-	-
28. Cucurbitaceae										
111	<i>Cucumis sativus</i> Linn.	-	+	-	+	-	-	-	-	-
112	<i>Cucumis prophetorum</i>	-	-	-	-	-	-	-	-	-
113	<i>Cucurbita pepo</i> L.	-	+	-	+	-	-	-	-	-
114	<i>Cucurbita maxima</i> Duchesne.	-	+	-	+	-	-	-	-	-
115	<i>Legenaria siceraria</i>	+	-	-	-	-	-	-	-	-
29. Cuscutaceae										
116	<i>Cuscuta reflexa</i> Roxb		+	-	-	-	-	-	-	-
30. Euphorbiaceae										
117	<i>Euphorbia hirta</i>	+	+	-	-	-	-	-	-	-
118	<i>Euphorbia helioscopia</i> L.	-	+	-	-	-	-	-	-	-
119	<i>Euphorbia prostrata</i> Ait.	+	+	-	-	-	-	-	-	-
120	<i>Echinops echinatus</i> D.C	+	-	-	-	-	-	-	-	-
121	<i>Ricinus communis</i> L.	-	+	-	-	-	-	-	-	-
31. Fumaraceae										
122	<i>Fumaria indica</i> (Hausskn.) Pugsley	+	-	-	-	-	-	-	-	-
32. Lamiaceae										
123	<i>Salvia aegyptiaca</i> Wall	-	+	-	-	-	-	-	-	-
124	<i>Mentha longifolia</i>	-	+	-	+	-	-	-	-	-
125	<i>Mentha arvensis</i> L.	-	+	-	+	-	-	-	-	-
126	<i>Ocimum basilicum</i> L.	-	+	-	-	-	-	-	-	-
33. Malvaceae										
127	<i>Abelmoschus esculentus</i> (L.)	-	-	-	+	-	-	-	-	-
128	<i>Hibiscus trionum</i>	-	+	-	-	-	-	-	-	-

129	<i>Malvastrum coromandelianum</i> (L.) Gareke.	+	+	+	-	-	-	-	-	-
34. Meliaceae										
130	<i>Melia azedarach</i> L.	-	+	+	-	-	-	-	-	-
35. Mimosaceae										
131	<i>Acacia nilotica</i> (L.) Delice.	+	+	+	-	-	+	-	+	-
132	<i>Acacia modesta</i> Wall.	+	+	+	-	-	+	+	+	-
133	<i>Albizia lebbbeck</i> (L.) Benth.	+	+	+	-	-	+	+	+	-
36. Moraceae										
134	<i>Ficus palmate</i>	+	+	+	-	+	-	-	-	-
135	<i>Morus alba</i> L.	+	+	+	-	+	-	-	-	-
136	<i>Morus nigra</i> L.	+	+	-	-	-	-	-	-	-
37. Myrtaceae										
137	<i>Eucalyptus globules</i> L.	+	+	+	-	-	+	-	-	-
138	<i>Eucalyptus lanceolatus</i>	+	+	+	-	-	+	-	-	-
139	<i>Syzygium cuminii</i> (L.) Skeels	+	+	-	-	-	-	-	-	-
38. Musaceae										
140	<i>Musa paradisiaca</i> L.	+	+	-	-	+	-	-	-	-
39. Nyctaginaceae										
141	<i>Mirabilis jalapa</i> L.	-	-	-	-	-	-	-	-	-
40. Papilionaceae										
142	<i>Astragalus psilocentros</i> Fisch.	+	+	+	-	-	-	-	-	-
143	<i>Cicer arietinum</i> L.	+	-	-	-	-	-	-	-	-
144	<i>Dalbergia sissoo</i> Roxb.	+	+	+	-	-	+	+	-	+
145	<i>Medicago laciniata</i> (L.) Mill.	+	-	-	-	-	-	-	-	-
146	<i>Melilotus longifolia</i> (L.)	-	+	-	-	-	-	-	-	-
147	<i>Melilotus indicus</i> (L.) All.	-	+	-	-	-	-	-	-	-
148	<i>Trigonella mcisa</i>	+	-	-	-	-	-	-	-	-
149	<i>Vicia sativa</i> L.	+	-	-	-	-	-	-	-	-
41. Papaveraceae										
150	<i>Papaver somniferum</i>	+	+	-	-	+	-	-	-	-
42. Plantaginaceae										
151	<i>Plantago lanceolata</i> L.	+	-	-	-	-	-	-	-	-
152	<i>Plantago minor</i> L.	+	-	-	-	-	-	-	-	-
43. Portulacaceae										

153	<i>Portulaca quardrifida</i> L.	+	+	-	-	-	-	-	-	-
44. Polygonaceae										
154	<i>Calligonum polygonoides</i> L.	+	+	+	-	-	-	-	-	-
155	<i>Polygonum plebeium</i> R. Br	+	-	-	-	-	-	-	-	-
156	<i>Rumex dentatus</i> L.	+	+	-	-	-	-	-	-	-
157	<i>Rumex hastatus</i>	+	+	-	-	-	-	-	-	-
158	<i>Rumex vesicarius</i>	+	+	-	-	-	-	-	-	-
45. Primulaceae										
159	<i>Anagallis arvensis</i>	+	-	-	+	-	-	-	-	-
46. Punicaceae										
160	<i>Punica granatum</i> L.	+	+	+	-	+	-	-	-	-
47. Ranunculaceae										
161	<i>Ranunculus muricatus</i> L.	-	+	-	-	-	-	-	-	-
48. Resedaceae										
162	<i>Reseda odorata</i> L.	+	-	-	-	-	-	-	-	-
163	<i>Oligomeris linifolia</i> (Vahl.) Macbride	-	-	-	-	-	-	-	-	-
49. Rosaceae										
164	<i>Rosa indica</i> L.	+	+	-	-	-	-	-	-	-
50. Rhamnaceae										
165	<i>Zizyphus nummularia</i> . (Burm.f) W.&A	+	+	+	-	+	-	+	+	-
166	<i>Zizyphus oxyphylla</i> Edge.	+	+	+	-	+	+	+	+	+
167	<i>Zizyphus mauritiana</i>	+	+	+	-	+	+	+	+	+
51. Rubiaceae										
168	<i>Galium aparine</i>	-	+	-	-	-	-	-	-	-
169	<i>Galium tricornis</i>	-	+	-	-	-	-	-	-	-
52. Salvadoraceae										
170	<i>Salvadora oleoides</i> Decne.	+	+	-	-	-	-	-	-	-
53. Salicaceae										
171	<i>Populus alba</i> L	-	-	-	-	-	-	-	-	-
54. Sapindaceae										
172	<i>Dodonaea viscosa</i> L.	-	+	+	-	-	-	-	-	-
55. Sapotaceae										
173	<i>Monothea buxifolia</i> (Falc.) A. DC.	+	-	-	-	-	-	-	-	-
56. Scrophulariaceae										

174	<i>Veronica aquatica</i> Bern	-	-	-	-	-	-	-	-	-
175	<i>Lindenbergia indica</i>	-	-	-	-	-	-	-	-	-
176	<i>Kickxia incana</i> (Wall) Penn.	-	+	-	-	-	-	-	-	-
57. Solanaceae										
177	<i>Capsicum annum</i> L.	-	+	-	+	-	-	-	-	-
178	<i>Datura alba</i> Nees	-	+	-	-	-	-	-	-	-
179	<i>Datura innoxia</i>	-	+	-	-	-	-	-	-	-
180	<i>Hyosyamus niger</i>	-	+	-	-	-	-	-	-	-
181	<i>Hyoscyamus squarrosus</i> Griffith.	-	-	-	-	-	-	-	-	-
182	<i>Hyosyamus insanus</i>	-	+	-	-	-	-	-	-	-
183	<i>Lycopersicom esculentum</i> Mill.	+	-	-	+	-	-	-	-	-
184	<i>Solanum surattense</i> Burm.f.	+	+	-	-	-	-	-	-	-
185	<i>Solanum melangena</i>	+	+	-	+	-	-	-	-	-
186	<i>Solanum tuberosum</i>	+	+	-	+	-	-	-	-	-
187	<i>Withania coagulans</i> Dunal.	-	+	-	-	-	-	-	-	-
188	<i>Withania somnifera</i> (L.) Dunal.	-	+	+	-	-	-	-	-	-
58. Tamaricaceae										
189	<i>Tamarix aphylla</i> (L.) Karst.	+	+	+	-	-	+	+	-	+
59. Thymelaceae										
190	<i>Thymelaea passerine</i>	-	-	-	-	-	-	-	-	-
60. Verbenaceae										
191	<i>Verbena hybrida</i> Briq.	-	-	-	-	-	-	-	-	-
192	<i>Verbena officinalis</i>	-	-	-	-	-	-	-	-	-
193	<i>Vitex negundo</i> L.	+	+	-	-	-	-	-	-	-
194	<i>Phylla nodiflora</i> L. (Greene)	-	-	+	-	-	-	-	-	-
61. Vitaceae										
195	<i>Vites vinifera</i> L.	+	+	-	-	+	-	-	-	-
62. Zygophyllaceae										
196	<i>Fagonia cretica</i> L.	+	+	-	-	-	-	-	-	-
197	<i>Peganum harmala</i> L.	-	+	+	-	-	-	-	-	-
198	<i>Tribulus terrestris</i> L.	+	+	-	-	-	-	-	-	-
	Total	129(65%)	108(55%)	30(15%)	25(13%)	11(6%)	10(5%)	8(4%)	7(3.5%)	4(2%)

Vegetable utilization

25 plants were used as a vegetable in Darazinda which amount to 13%. *Abelmoschus esculentus*, *Allium cepa*, *Allium sativum*, *Amaranthus viridis*, *Anagallis arvensis*, *Brassica campestris*, *Brassica oleraceae*, *Caralluma tuberculata*, *Capsicum annum*, *Chenopodium album*, *Chenopodium murale*, *Coriandrium sativum*, *Cucumis sativus*, *Cucurbita maxima*, *Cucurbita pepo*, *Lactuca sativa*, *Lactuca serriola*, *Lycopersicon esculentum*, *Mentha arvensis*, *Raphanus sativus*, *Solanum melangena*, *Solanum tuberosum* etc were used as vegetables. These vegetables are mostly cultivated near the homes and cater their needs to some extent. Similar results were obtained by Sher *et al.* [20] who reported 36 vegetables species. Hazrat *et al.* [29], Sher *et al.* [20], Badshah and Hussain [30], Razaq *et al.* [31] and Durrani *et al.* [32] also reported similar results.

Fruit yielding plants

The results showed that 11 (6%) out of 198 plants in the area were fruit yielding. *Mengifera indica*, *Morus alba*, *Morus nigra*, *Musa paradisiaca*, *Papaver somniferum*, *Phoenix dactylifera*, *Punica granatum*, *Vitis vinifera*, *Zizyphus oxyphylla*, *Zizyphus mauritiana*, *Zizyphus nummularia* were fruit yielding plants. Most of these first plants are cultivated, while some e.g. *Zizyphus nummularia* etc were wild. Similar results were shown by Lubna *et al.* [33] studied that 4.8% area in Pakistan covered by forests. Ibrar *et al.* [15] studied Ranyal Hill, Shangla and documented 18 edible species. Sher and Al-Yemni [26] worked on higher altitude of Malam Jaba Swat and reported 14 wild fruit species.

Timber wood utilization

10 (5%) plants were used as a timber in this area. *Acacia nilotica*, *Acacia modesta*, *Albizia lebbeck*, *Dalbergia sissoo*, *Eucalyptus globules*, *Eucalyptus lanceolatus*, *Phoenix dactylifera*, *Tamarix aphylla*,

Zizyphus oxyphylla, *Zizyphus mauritiana* etc are used as timber wood for making doors and windows etc. Our result is similar with Sher *et al.* [20] who recorded 21 timber species from Chagharzai Valley, District Buner, Pakistan.

Agricultural tool making

As the area is backward and poor, peoples still use conventional agricultural techniques using modern agricultural tools. The local people have cultivated small farmlands with the help of indigenous agricultural tools. A total 4 (2%) plants were used for making agriculture tools including *Dalbergia sissoo*, *Tamarix aphylla*, *Zizyphus oxyphylla*, *Zizyphus mauritiana*. Different wood species were used e. g. wood of *Z. mauritiana* was used for making handles of axes and ploughs. Similar results were reported from different parts of the country by Sher and Al Yemni [26], Sher *et al.* [20], Durrani *et al.*, [32], Ibrar *et al.* [15] and Zabihullah *et al.* [34]. Different wood species may differ in different parts of the country which are same uses. For ploughing the wood of *Z. mauritiana* is used for making handles of axes.

Other utilization of plant resources

Recent study showed that 07 (3.5%) plant species were used for furniture making. *Acacia modesta*, *Albizia lebbeck*, *Dalbergia sissoo*, *Phoenix dactylifera*, *Tamarix aphylla*, *Zizyphus oxyphylla*, *Zizyphus mauritiana*, *Zizyphus nummularia* are used for making furniture. Also 07 (4%) plants were used for fencing agricultural fields. *Acacia nilotica*, *Acacia modesta*, *Albizia lebbeck*, *Phoenix dactylifera*, *Zizyphus oxyphylla*, *Zizyphus mauritiana*, *Zizyphus nummularia* were used for fencing. Similar results were reported by Durrani *et al.* [32], Sher *et al.* [20], Sher and Al-yemni [26] reported similar results of plant uses for furniture from different areas of the country.

Authors' contributions

Design and conducted the experiment: U Samreen & M Ibrar, Data collection, analysis

and interpretation of the data: L Badshah, S Naveed & I Khatak, Edited, reviewed and revised the paper: Imran.

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