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Research Article

Quantitative And Ethnobotanical Assessment Of Flora Of Pithoragarh District Kumaun Himalaya Uttarakhand

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ABSTRACT

Present study was carried out in Pithoragarh district of Kumaun Himalaya from 500 m asl - 2400 m asl. The study was undertaken to document the plants of ethno-medicinal significance and their quantitative analyses. The traditional knowledge was collected from 312 informants using open interviews and semi-structured questionnaires. The data were analysed quantitatively in term of use value (UV) and Family use-value (FUV). A total 255 plant species (136 herb 66 shrub and 53 tree) belonging to 84 families were recorded ethnobotanically important. 165 species were used as fodder, 56 as fuel wood, 127 used as medicinal, 22 as timber, 43 as edible, 8 as ornamental, 3 as fiber, 13 as sacred, 23 as agriculture tool 8 as fencing, and 6 species were used miscellaneously. Use value of 255 species was in range between 0.10 to 2.25.

INTRODUCTION

Vegetation is one of the most valuable gifts to earth. Nature has provided all basic and essential necessities of the humans mainly in the form of food, fodder, fuel, medicine, timber, resins and oils etc. (Gaur, 1999) In Himalayan region communities highly depend on forest and forest resources as green fodder, fuel wood, medicinal plant and timber (Singh and Singh 1987). People of the region largely depend upon a variety of ecosystem goods and services emanating from these forest ecosystems for their subsistence living

(Negi 2022). The rich diversity of Central Himalayan forests harbors over 675 wild plant species used by people as food/edible (Negi 2022). At global level a wide diversity of people of the world depends on natural vegetation for their day-to-day needs and sustenance (Rana and Samant, 2011). According to the floral statistics of India (BSI, Kolkata 2019), a total of 2, 68,600 flowering plants of which 6.95% exist in India. The Himalayan range is home of unique endemic and therapeutic plants, but now days traditional wisdom is depleting due to increasing

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anthropogenic pressure (Tiwari et al., 2020). Rapid loss of this rich traditional knowledge is also associated with mass deforestation, migration and over exploitation. Hence, there is a serious need for proper documentation of indigenous knowledge. Detailed documentation of ethnobotanical study is necessary for conserving traditional knowledge.

Study area

Pithoragarh district is the easternmost Himalayan district in Uttarakhand state. The district lies between 29.4° to 30.3° North latitude and 80° to 81° East longitude along the eastern and southern part of the central Himalayas. A Total 23 village of Pithoragarh and Gangolihat Bagsil, Jajurali, Sanghar, Bans Maitoli, Budali, Sinchaura, Nakote, Majhera, Kante, Halpati, Digtoli, Gurangchaur, Bhandarigaon, Chitgal, Pali, Rawal gaon, Jajut,

Pokhari, Simalkote, Kothera, Bayal pani, Balakuncha, Rankot, Agrun was surveyed during study. Temperature range between 0- 40°C during the coldest month of January, an average monthly temperature between 0°C to 6°C. By the March the temperature begins to rise progressively till early June which is the hottest month (35 to 40°C) in valley area. Pithoragarh district is ecologically very rich with diversified flora and fauna. The flora of the district includes many Bryophytes, Pteridophytes, Gymnosperms and Angiosperms. Rare varieties of Orchids are also present in the high altitude (Champion and Seth, 1968). The river valleys are dominated by Sal forests, while increasing elevation Chir pine replaces the Sal forests followed by *Quercus leucotrichophora* A. Camus (Banj) and Deodar forest in the upper ridges of the study area

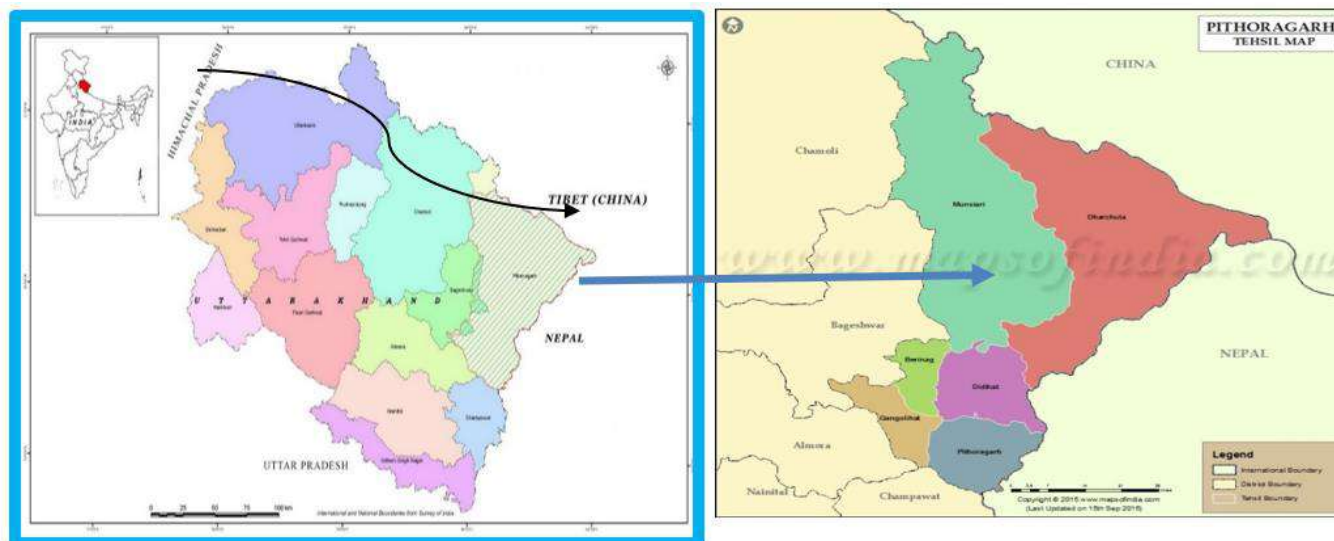


Figure 1: Map showing location of study area.

Methodology

Several intensive field surveys were conducted from March 2018 to September 2020. A total of 312 people were interviewed including 28 Vaidh (traditional healers) and 284 villagers. Interviews were conducted at village and in forest using semi structured questionnaires (Philips and Gentry 1993, Bargali et al., 2007, Padaliya et al., 2015) with participant members of different ages (23–87 years). For use value calculation method of Philips

and Gentry (1993) followed. The informants with knowledge about plants were questioned during the interviews for the local names of the plants, use, available season, spiritual beliefs, harvesting season, utilized parts, drug preparation methods etc. Information gathered by two methods viz. (1) walk in wood method in this case local name and use of plant in field were asked (2) information about ethnobotanical use of plant were collected by with the help of questionnaire.

Use value of species calculated by following formula-

Use value of each species *s* for each informant *i* UV_{is} define as $UV_{is} = \sum U_{is} / n_{is}$

U_{is} equal the number of uses mentioned in each event by informant *i* n_{is} equal the number of events for species *s* with informant *i*.

Overall use value for each species *s*, UV_s is then-

$$UV_s = \sum i UV_{is} / n_s$$

n_s=

equal no of informants interviewed for species *s*

Family use-value (FUV) The significance of plant families can be compared by estimating the FUV.

FUV was calculated using the following formula:

$$FUV = \sum UV_f / n_t$$

Where UV_f is the use-values for all the species within a given family and n_t is the total number of species within a given family.

RESULTS AND DISCUSSION

A total sum of 255 species belonging to 85 families was recorded ethnobotanically important

from present study area. These species distributed in different life forms, i.e., trees (53 species), shrubs (66 species), herbs (136 species). Among families, Poaceae (23 species) represented as the dominant family followed by Fabaceae (20 species), Asteraceae (19 species), Lamiaceae (14 species), Rosaceae (11 species), Moraceae (8 species), Acanthaceae (7 species), Urticaceae (7 species) Lauraceae (5 species) and Anacardiaceae (4 species). A total 312 (127 female and 187 male) people were interviewed including 28 Vaidh and 284 villagers. A detail example of calculating use value was illustrated in Table 1.1- it explains the technique with typical example of Quercus leucotrichophora A. Camus (Fagaceae) it shows data from 3 events with one informant. the number of uses are sum-up for each event and each use is averaged across event. The mean value was transferred to table 1.2. Table 1.2 listed the use value of Quercus leucotrichophora for each 5 informant interviewed, by category and by total.

Table no.1 Uses of Quercus leucotrichophora mentioned in 3 separate events

Uses	Total	Fu	Fo	M	Be	Ti	Fi	Ed	Or	Mn	Se	To	Fe	Ot
Event 1	5	1	1	0	0	1	0	0	0	1	0	1	0	0
Event 2	6	1	1	0	0	1	0	0	0	1	0	1	0	1
Event 3	6	1	1	0	1	1	0	0	0	1	0	1	0	0
Mean	5.66	1	1	0	0.33	1	0	0	0	1	0	1	0	0.33

Table no. 2- Use value of Quercus leucotrichophora

Informant	Total	Fu	Fo	M	Be	Ti	Fi	Ed	Or	Mn	Se	To	Fe	Ot
1	5.66	1	1	0	0.33	1	0	0	0	1	0	1	0	0.33
2	7	1	1	0	1	1	0	0	0	1	0	1	0	1
3	6.3	1	1	0	0.67	1	0	0	0	1	0	1	0	0.67
Mean	6.34	1	1	0	0.66	1	0	0	0	1	0	1	0	0.66
Use value = 6.33/3= 2.11														

Abbreviations used: Fu= Fuel wood Fo= Fodder, M= Medicinal, Ti= Timber, Ed= Edible, Or= Ornamental use, Mn= manure/ Fertilizer, Se= Sacred, To= Tool, Be= Cattle bedding Fe= Fencing, Ot= Other

Thus the Use value (UV_s) of Quercus leucotrichophora is 2.11 . Use value generally give us idea about the pressure on species, species have high use value show more pressure or multipurpose used by community. In present example Quercus

leucotrichophora used in 7 category by community indicated high use value. Use value of total 255 plants was calculated (table 3). Different uses of species were categorized in 12 broad categories these were fuel wood, fodder, medicinal, timber, edible, ornamental, fertilizer, sacred, agriculture tool, cattle bedding, Fencing, and other. In present study 165 species were used as fodder, 56 as fuel wood, 129 used as medicinal, 22 as timber, 43 as edible, 8 as ornamental, 3 as fiber, 13

as sacred, 26 as agriculture tool, 8 as fencing, 10 as cattle bedding and 6 species were used miscellaneously (Figure 2). The plant parts used ethnobotanically were leaves (44%), whole plant (24%),

Fruit (6%), seeds (5%), flowers (5%) roots (5%), barks (4%), seed (4%), Rhizome (4%), Bulbs (2%) and wood/latex (1% each) (Figure 3).

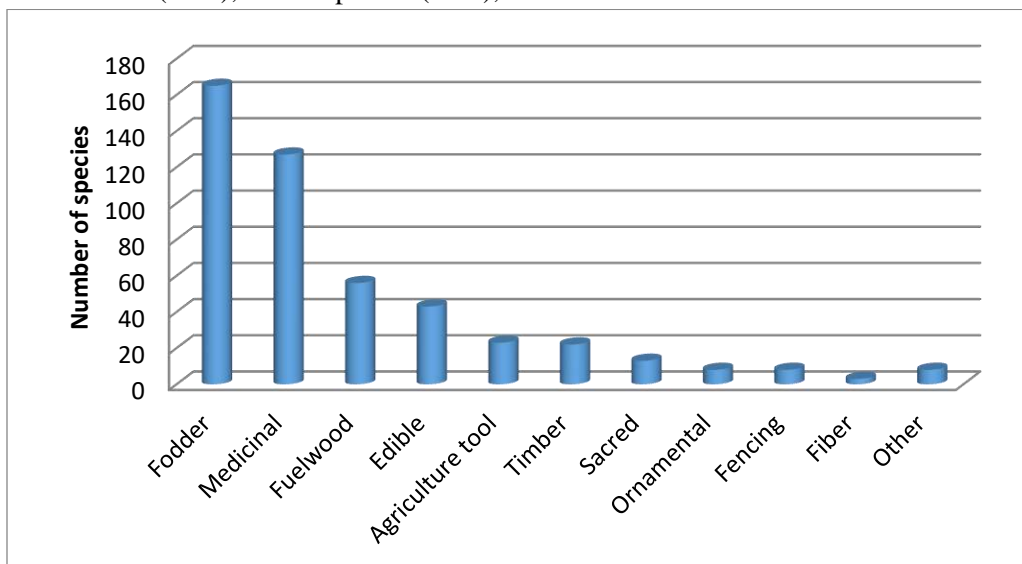


Figure- 2 Distribution of species in different use category

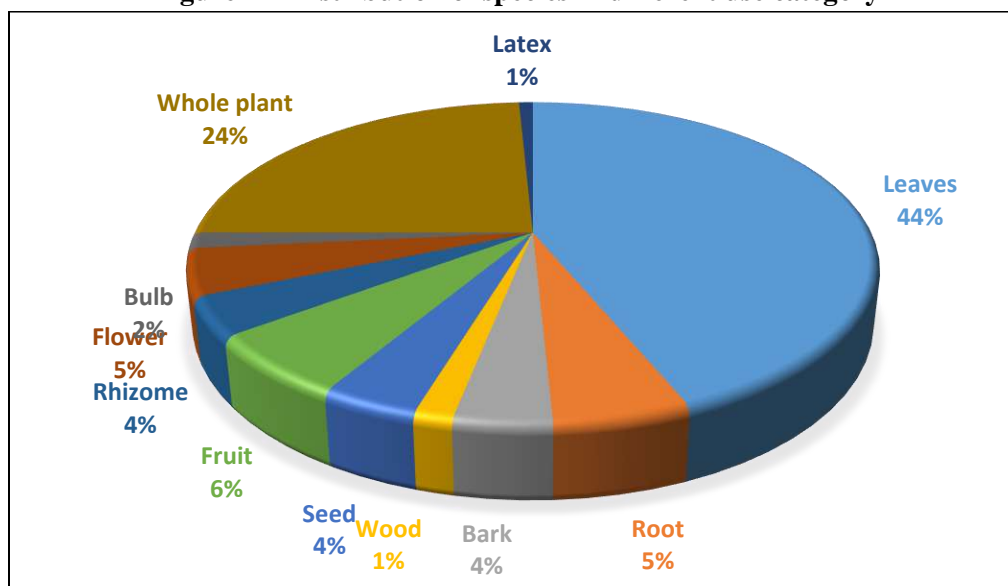


Figure 3 - Graphical representation of plant parts used

Table 3- Diversity, Nativity, life form and Use value of different plant species of Pithoragarh Region, Kumaun Himalaya

Sr. No.	Taxa	Family	Local Name	Part Use	L F	AR (m)	Use	Use value	FUV
1	Adhatoda vasica Nees	Acanthaceae	Basing	Lv	S	800-1000	Medicinal (Juice of leaf with honey used in cough, cold & asthma)	0.33	0.36

2	Barleria cristata L.	Acanthaceae	Jhinti	Sd	S	800-1000	Medicinal (Seed paste is applied externally on insect bite)	0.17	
3	Dicliptera roxburghiana Nees	Acanthaceae		Ap	H	1200 - 1600	Fodder, Medicinal (Crushed leaves use in skin disease)	0.67	
4	Justicia simplex D. Don	Acanthaceae		Ap	H	1700 - 2000	Fodder	0.33	
5	Nelsonia canescens (Lam.) Spreng.	Acanthaceae		Lv	H	1000 - 1500	Medicinal (Leaves paste use in wound healing)	0.33	
6	Strobilanthes alatus Nees	Acanthaceae		Ap	H	1800 - 2100	Fodder	0.33	
7	Strobilanthes wallichii Nees	Acanthaceae	Jimla	Ap	S	1900 - 2100	Fodder	0.33	
8	Agave americana L.	Agavaceae	Rambas	Ap	S	700-1200	Fencing , Fiber	0.67	0.67
9	Achyranthes bidentata Blume	Amaranthaceae	Apamarg	Lv	H	1700 - 2100	Fodder, Medicinal (Decoction of root and seed is used in conjunctivitis, fever, headache)	0.5	0.54
10	Achyranthes aspera L.	Amaranthaceae	Chirchita	Ap	H	1300 - 1800	Fodder, Medicinal (Aqueous extract used for stones in the bladder)	0.58	
11	Semecarpus anacardium L.	Anacardiaceae	Bhilwa	Lv, St	T	600-1100	Fodder , Medicinal (Juice of the fruit used externally on treatment)	1.00	0.84

							of chapped feet and ringworm)		
12	Rhus cotinus L.	Anacardiaceae	Tungla	Lv, St	S	850-1200	Fuel wood, Fodder, agricultural tool, cattle bedding	0.93	
13	Rhus parviflora Roxb.	Anacardiaceae	Sutar	Lv, St	S	1000 - 1500	Fuel wood , Fodder, Timber, agricultural tool, cattle bedding	0.93	
14	Rhus wallichii Hook. f.	Anacardiaceae		Lv, St	S	1400 - 2100	Fuelwood, Fodder	0.5	
15	Bupleurum lanceolatum Wall. Ex	Apiaceae	Kakhriya	Ap	H	1900 - 2100	Medicinal (Leaves and flowers paste is applied on arthritis)	0.25	0.25
16	Centella asiatica L.	Apiaceae	Brahmi	Lv	H	1200 - 1900	Medicinal (Leaves juice used orally as a tonic)	0.33	
17	Heracleum nepalense D. Don	Apiaceae		Lv	H	1900 - 2100	Medicinal (Boiled Seed use in stomach pain)	0.33	
18	Hydrocotyle javanica Thunb	Apiaceae	Choti bhrami	Lv	H	1700 - 2100	Medicinal (Leaves juice used in fever, leave paste applied on wound)	0.1	
19	Ilex dipyrena Wall	Aquifoliaceae		Lv, St	T	1900 - 2000	Fuel wood , Fodder, Timber	1	1
20	Arisaema concinnum Schott	Araceae	Sanpka bhutta	Rt	H	1900 - 2100	Medicinal (Root paste applied on infected wound)	0.33	0.25
21	Colocasia affinis Schott	Araceae		Lv	H	1600 - 1900	Medicinal (Juice from crushed	0.17	

							leaves is used as an antibiotic in cattle wound)		
22	Hedera nepalensis K.Koch	Araliaceae	Matiyari	Ap	C	1900 - 2100	Fodder	0.33	0.33
23	Asparagus adscendens Willd.	Asparagaceae	Kairu	Rt	S	1600 - 2000	Edible, Medicinal (Root powder with milk used in increase lactation. Root decoction is given to cure blood disease, diarrhoea)	0.67	0.61
24	Ophiopogon intermedius D.Don	Asparagaceae		Ap	H	1200 - 1400	Fodder	0.33	
25	Polygonatum verticillatum (L.)	Asparagaceae	H	Rt	H	2000 - 2100	Medicinal root of plant clean and cut in small pieces and soaked in water overnight and consumed in piles	0.85	
26	Ageratina adenophora (Spreng.) R. M. King and H. Rob.	Asteraceae		Lv	H	900-1900	Medicinal (Fresh leaves juice applied in cut to stop bleeding)	0.33	0.36
27	Artemisia parviflora Buch-Ham. Ex Roxb.	Asteraceae	Pati	Ap	S	1500 - 1700	Sacred plant used in all holy occasion, Fodder, Medicinal (Leaves are used in skin disease.)	0.74	

28	<i>Ainsliaea aptera</i> DC.	Asteraceae	Karui buuti	Rt	H	1700 - 2000	Medicinal (Root powder use in quick relief in stomach pain)	0.22	
29	<i>Ainsliaea latifolia</i> (D. Don) Sch. Bip.	Asteraceae		Lv	H	1800 - 2100	Fodder	0.33	
30	<i>Anaphalis busua</i> (Buch.-Ham. ex D. Don) DC.	Asteraceae	Bakol	Wp	H	1000 - 1400	Medicinal (Plants paste applied on cuts and wounds.)	0.33	
31	<i>Anaphalis contorta</i> (D. Don) Hook. f.	Asteraceae	Bakol	Ap	H	1500 - 1800	Medicinal (Flower paste applied on burn)	0.25	
32	<i>Anaphalis triplinervis</i> (Sims) Sims ex C.B. Clarke	Asteraceae		Ap	H	1800 - 2100	Medicinal (Juice of plant used in wound healing)	0.25	
33	<i>Artemisia nilagirica</i> (C. B. Clarke) Pamp.	Asteraceae	Pati	Lv	H	1800 - 2000	Fodder, Medicinal (Paste of plant applied on wound caused by parasite on animal)	0.74	
34	<i>Bidens pilosa</i> L.	Asteraceae	Kumariya	Lv	H	1200 - 1600	Fodder. Medicinal (Juice of leaves applied on itching feet in rainy season)	0.33	
35	<i>Emilia sonchifolia</i> (L.) DC	Asteraceae	Hirankuri		H	1600 - 2100	Medicinal (Paste of leaves with garlic applied on tonsillitis)	0.33	
36	<i>Erigeron bellidioides</i> Benth. ex C.B. Clarke	Asteraceae		Ap	H	1700 - 2100	Fodder	0.67	

37	Galinsoga parviflora Cav.	Asteraceae	Marchi jhar	Lv	H	1900 - 2100	Fodder, Medicinal (Few drops of leaf juice useful in earache.)	0.67	
38	Gynura nepalensis DC.	Asteraceae		Lv	H	1100 - 1900	Medicinal (juice of fresh leaves applied in cut)	0.1	
39	Inula cappa (Buch.-Ham. ex D. Don) DC.	Asteraceae		Rt	H	1500 - 1900	Medicinal (Root paste is applied externally on skin disease.)	0.1	
40	Myriactis nepalensis Less.	Asteraceae		Ap	H	1500 - 2000	Fodder, Edible	0.27	
41	Senecio nudicaulis Buch-Ham. ex D. Don	Asteraceae		Ap	H	1200 - 2000	Fodder	0.33	
42	Solidago virgaurea L.	Asteraceae		Ap	H	1700 - 2000	Medicinal (Paste of leave applied in swelling and pain)	0.33	
43	Taraxacum officinale (L.) Weber ex F.H.Wigg.	Asteraceae	Dhudal	Ap	H	1700 - 2000	Fodder	0.33	
44	Youngia japonica (L.) DC	Asteraceae		Lv	H	1200 - 1600	Fodder	0.33	
45	Athyrium fimbriatum Hooker ex T. Moore	Athyriaceae		Ap	F	1700 - 2000	Ornamental	0.33	0.45
46	Diplazium esculentum (Retz.) Sw.	Athyriaceae		Lv	F	1700 - 2000	Edible, Medicinal (Boil extract of young fronds use in liver damage and cancer)	0.58	
47	Impatiens amphorata Edgew	Balsaminaceae		Lv	H	1800 - 2000	Fodder	0.33	0.33

48	<i>Stellaria media</i> L.	Caryophyllaceae		Lv	H	1600 - 2000	Fodder	0.1	0.1
49	<i>Begonia picta</i> Smith.	Begoniaceae		Wp	H	1900 - 2000	Fodder, Medicinal (Root juice used as an eyewash in conjunctivi tis and crushed leaves applied on sore nipples)	0.67	0.67
50	<i>Berberis aristata</i> DC.	Berberidaceae	Daruhaldi	Wp	S	1700 - 2100	Fruit Edible , Fodder , Sacred, Fencing Medicinal (Fruit useful in toothache , root bark decoction is used in treating malaria fever)	1.33	1.10
51	<i>Berberis asiatica</i> Roxb. ex DC.	Berberidaceae	Kilmoda	Wp	S	1200 - 2000	Fruit Edible , Fodder, Sacred, Medicinal (Powder of root with warm water is given orally to treat diabetes and jaundice. Bark paste is applied externally treat conjunctivi tis)	1.25	
52	<i>Mahonia napaulensis</i> (DC.) Spreng.	Berberidaceae		Wp	S	1800 - 2100	Medicinal (Root powder used as	0.5	

							tonic and decoction of bark use in inflammation of eyes)		
53	<i>Alnus nepalensis</i> D. Don	Betulaceae	Utees	Wd, Lv	T	1800 - 2100	Fodder, Fuelwood	1	0.83
54	<i>Carpinus betulus</i> L.	Betulaceae	Chamkhadik	Lv	T	1700 - 2000	Fodder	0.5	
55	<i>Carpinus viminea</i> Wall. ex Lindl.	Betulaceae	Chamkhadik	Lv	T	1600 - 2100	Fodder, Tool	1	
56	<i>Woodwardia unigemmata</i> (Makino) Nakai	Blechnaceae		Lv	F	1600 - 2000	Fodder	0.25	0.25
57	<i>Celtis australis</i> L.	Cannabaceae		Lv Wd	T	1200 - 1600	Fodder, Fuelwood, Agricultural tool, Timber	1.67	1.67
58	<i>Lonicera parviflora</i> Lam.	Caprifoliaceae		Lv	S	1700 - 2000	Fodder	0.33	0.66
59	<i>Lonicera quinquelocularis</i> Hardw.	Caprifoliaceae		Lv	S	1900 - 2100	Fodder	0.33	
60	<i>Viburnum coriaceum</i> Blume	Caprifoliaceae		Lv	S	1600 - 2000	Fodder	0.5	
61	<i>Viburnum cotinifolium</i> D.Don	Caprifoliaceae		Lv, Fr	S	1900 - 2100	Edible, Fodder	0.67	
62	<i>Viburnum mullaha</i> Buch.-Ham. ex D. Don	Caprifoliaceae		Lv, Fr	S	2000 - 2100	Fodder, Edible, Medicinal (The juice of fruit used in indigestion)	0.89	
63	<i>Euonymus tingens</i> Wall	Celastraceae		Lv	S	1800 - 2000	Fodder	0.17	0.25
64	<i>Gymnosporia royleana</i> Wall. ex M. A. Lawson	Celastraceae		Lv	S	1700 - 2100	Fodder	0.33	
65	<i>Anogeissus latifolia</i> (DC.) Wallich ex Guill. and Perr.	Combretaceae		Lv, Wd	T	800- 1100	Fodder, Fuelwood	0.92	1.27

66	Terminalia alata B. Heyne ex Roth	Combretaceae	Saj	Lv, Wd, Fr, Br	T	1000 - 1200	Fuelwood, Fodder, Timber, Medicinal (Boiled bark juice rubbed in head to remove dandruff)	1.17	
67	Terminalia bellirica (Gaertn.) Roxb.	Combretaceae	Harar	Lv, Wd, Fr, Br	T	900-1200	Edible, Fuelwood, Fodder, Timber, Medicinal (Dry fruit powder with warm water used in treating infant stomach pain and gas, used in making Trifala churn)	1.47	
68	Terminalia chebula Retz	Combretaceae	Bhera	Lv, Wd, Fr, Br	T	1000 - 1400	Fuelwood, Fodder, Edible, Medicinal (Dried fruit powder is given in cough problems. Fruit juice used in skin problem act as blood purifier)	1.5	
69	Commelina paludosa Blume	Commelinaceae	Kanya	Lv	H	1500 - 1800	Fodder	0.33	0.33
70	Ipomoea purpurea (L.) Roth	Convolvulaceae	Gheebel	Ap	H	1600 - 1900	Fodder	0.33	0.33
71	Evolvulus alsinoides (L.) L.	Convolvulaceae	Vishnukranti	Ap	H	1200 - 1500	Medicinal (Plant decoction use as	0.33	

							memory tonic)		
72	Coriaria nepalensis Wall.	Coriariaceae	Makhol	Lv	S	2000 - 2100	Fodder,	0.67	0.67
73	Cupressus torulosa D. Don	Cupressaceae		Lv, Wd	T	1900 - 2100	Timber, Ornamental, Fuelwood	1.08	1.08
74	Cyperus brevifolius (Rottb.) Hassk.	Cyperaceae		Lv	H	800-1000	Fodder	0.33	0.33
75	Cyperus rotundus L.	Cyperaceae		Lv	H	900-12000	Fodder	0.33	
76	Dioscorea deltoidea Wall. ex Griseb	Dioscoreaceae	Jangali Gethi	Fr	C	1800 - 2000	Edible, Medicinal (Powder of tuber used in intestinal parasite)	0.67	
77	Dioscorea belophylla (Prain) Viogt. ex Haines	Dioscoreaceae	Tarur	Fr	C	1000 - 1400	Edible, Medicinal (Roasted tubers with black salt used to treat old cough.)	0.67	0.67
78	Shorea robusta C. F. Gaertn.	Dipterocarpaceae	Sal	Lv, Wd	T	600-900	Fuelwood, Fodder, Timber, Agriculture tool, cattle bedding	1.43	1.43
79	Dryopteris wallichiana (Spreng.) Hyl	Dryopteridaceae		Lv	F	1900 - 2100	Fodder	0.33	0.33
80	Elaeagnus parvifolia Wall. ex Royle	Elaeagnaceae	Gewai	Lv, Fr	S	1600 - 2000	Edible, Fodder, Medicinal (Fruit juice used in general weakness as tonic)	0.67	0.67
81	Equisetum diffusum D. Don	Equisetaceae		Ap	F	1900 - 2000	Ornamental, Medicinal (Paste of plant use in old wound and use as cooling medicine)	0.77	0.77

82	Lyonia ovalifolia (Wall.) Drude	Ericaceae		Lv, Wd	T	1400 - 1700	Fodder, Fuelwood, cattle bedding	0.85	1.16
83	Rhododendron arboreum Smith	Ericaceae		Lv, Wd, Fl	T	1700 - 2100	Ornamental , Fuelwood, Edible, Medicinal (Decoction of corolla used to cure high blood pressure. Leaves paste is applied on headache. Flower juice used as blood purifier)	1.56	
84	Jatropha curcas L.	Euphorbiaceae		S	S	800- 1100	Medicinal (Paste of seed is applied on arthritis)	0.33	0.67
85	Euphorbia heterophylla L.	Euphorbiaceae		Ap	H	800- 1100	Fodder	0.33	
86	Euphorbia hirta L.	Euphorbiaceae		Ap	H	800- 1100	Fodder	0.33	
87	Mallotus philippensis (Lam.) Müll.Arg.	Euphorbiaceae	Rween	Wp	T	700- 900	Fodder, Fuelwood, Timber, Tool ,Medicinal (Fruit powder with mustard oil use in hair fall, decoction of bark used in treating eczema)	1.7	
88	Abrus precatorius L.	Fabaceae	Ratti		S	700- 900	Medicinal (Paste of root applied in dog bite)	0.67	0.57
89	Acacia catechu (L.f.)Willd	Fabaceae	Khair	Wd	T	800- 900	Fuelwood, Timber,	0.67	

							Agriculture tool		
90	Acacia dealbata L.	Fabaceae	Acacia	Wd	T	900-1300	Fuelwood, Timber,	0.68	
91	Albizia lebbbeck (L.) Benth.	Fabaceae		Wd	T	700-900	Fuelwood, Timber, Agriculture tool	1	
92	Bauhinia variegata L.	Fabaceae	Kweral	Wp	T	900-1000	Edible, Fuelwood, Fodder, Medicinal (Bark decoction is used to cure leprosy and ulcers. Root used in insect bite)	0.93	
93	Bauhinia vahlii Wight and Arn.	Fabaceae	Kachnar	Lv	C	900-1200	Fodder, used in manure	0.33	
94	Cassia floribunda Cav.	Fabaceae		Wd	S	800-1000	Fuelwood	0.67	
95	Cassia occidentalis L.	Fabaceae	kasamard	Lv	H	1000 - 1200	Medicinal (Leaves of plant with honey help in curing cough)	0.33	
96	Cassia tora Linn	Fabaceae		Sd	H	800-1100	Medicinal (Seed paste applied on itchy skin and ringworm), used in manure	0.33	
97	Dalbergia sericea G. Don	Fabaceae		Wd	S	1000 - 1400	Agriculture tool	0.33	
98	Desmodium elegans DC.	Fabaceae		Ap	S	1500 - 2000	Fodder	0.5	
99	Desmodium latifolium DC.	Fabaceae		Ap	S	800-1200	Fodder	0.5	
100	Desmodium microphyllum (Thunb.) DC.	Fabaceae	Bhetula	Ap	H	800-1200	Fodder, Manure	0.33	
101	Flemingia macrophylla (Willd.) Merr.	Fabaceae		Ap	S	800-1500	Fodder	0.33	

102	<i>Flemingia strobilifera</i> (L.) W. T. Aiton	Fabaceae		Ap	S	800-1200	Fodder	0.33	
103	<i>Flemingia semialata</i> Roxb.	Fabaceae		Ap	S	800-1600	Fodder	0.5	
104	<i>Indigofera heterantha</i> Wall. ex Brandis	Fabaceae	Sakeen	Ap	S	1300 - 1600	Fodder, Manure, Medicinal (Leaves juice applied externally on headache)	0.77	
105	<i>Ougeinia oojeinensis</i> (Roxb.) Hochr.	Fabaceae	Samad	Wp	T	800-1300	Fodder, Fuelwood, Timber, Tool Medicinal (Juice of root use as eye tonic)	1.6	
106	<i>Piptenthus nepalensis</i> (Hook) D. Don.	Fabaceae		Lv	S	1900 - 2100	Fodder	0.33	
107	<i>Trifolium repens</i> L.	Fabaceae	Chalmadi	Lv	H	1300 - 1700	Medicinal (Paste of plant applied externally on honey bee bite and insect bite)	0.67	
108	<i>Quercus glauca</i> Thunb.	Fagaceae		Wp	T	1300 - 1800	Fuelwood, Fodder, Agricultural tool, Cattle bedding	1.5	1.81
109	<i>Quercus leucotrichophora</i> A. Camus	Fagaceae	Banj	Wp	T	1800 - 2100	Fuelwood, Fodder, Timber, Agriculture tool, leaves used in cattle bedding and dry gum resin is used in toothache.	2.13	

110	Canscora diffusa (Vahl) R.Br. ex Roem. and Schult.	Gentianaceae		Lv	H	800- 1000	Fodder	0.33	0.66
111	Swertia chirayita Buch Ham.	Gentianaceae	Chirayta	Wp	H	2000 - 2100	Medicinal (Leaves juice improve eyesight, root paste with honey useful in vomiting)	1	
112	Geranium nepalense Sweet	Geraniaceae		Ap	H	1900 - 2100	Fodder, Medicinal (Leaves paste applied externally on ulcer wound)	0.25	0.37
113	Geranium wallichianum D.Don ex Sw.	Geraniaceae		Ap	H	1900 - 2100	Fodder, Medicinal (Juice of plant useful in toothache)	0.5	
114	Hypericum oblongifolium Choisy	Hypericaceae	Basant	Ap	S	1900 - 2000	Medicinal (Plant extract use in dressing of external wounds)	0.1	0.1
115	Engelhardia spicata Leschen.ex Blume	Juglandaceae	Garmaho	Wd	S	1000 - 1300	Fuelwood	0.33	0.33
116	Anisomeles indica (L.) Kuntze	Lamiaceae		Lv	H	600- 800	Fodder	0.33	0.37
117	Ajuga parviflora Benth.	Lamiaceae	Ratpati	Lv	H	800- 1300	Medicinal (Leaves decoction is given orally to cure jaundice)	0.17	
118	Caryopteris odorata (D. Don) B.L.Rob.	Lamiaceae	Moni	Wd	S	900- 1200	Fodder, Fuelwood, Medicinal (Powdered leaves and flower use in diabetic wound)	0.77	

119	Calamintha umbrosa (M.Bieb.) Rchb.	Lamiaceae			H	1600 - 1800	Fodder, Medicinal (The juice of leaves applied to cut)	0.33	
120	Coleus barbatus (Andr.) Benth	Lamiaceae			H	1300 - 1400	Medicinal (Root juice is used orally in intestinal worm infection.)	0.33	
121	Elsholtzia flava Benth.	Lamiaceae		Lv	H	1200 - 1600	Medicinal (Crushed leave applied in treatment of scabies)	0.33	
122	Isodon rugosus (Wall. ex Benth.)	Lamiaceae		Lv	H	1800 - 1900	Medicinal (Extract of leaves use in toothache)	0.17	
123	Leucas aspera Wall.	Lamiaceae		Lv	H	1700 - 1800	Medicinal (Plant juice externally applied as insect repellent)	0.33	
124	Leucas lanata Benth.	Lamiaceae		Lv	H	1700 - 1800	Medicinal (Leaves decoction used in roundworm treatment)	0.1	
125	Origanum vulgare L.	Lamiaceae	Ban tulsi	Wp	H	1500 - 1700	Edible, Sacred, Medicinal (Whole plant decoction is used orally in fever. Leaves used as tea to cure cold and cough)	0.33	
126	Roylea cinerea (Don) Baill.	Lamiaceae		Lv	H	1700 - 2000	Fodder	0.33	

127	Salvia lanata, Roxb.	Lamiaceae		Ap	S	1500 - 1700	Medicinal (Pest of leaves and flower applied in itchy skin)	0.33	
128	Scutellaria discolor Colebr.	Lamiaceae		Lv	H	1700 - 1800	Fodder	0.33	
129	Vitex negundo L.	Lamiaceae	Nirgundi	Lv, Wd	H	1300 - 1600	Sacred plant used in Shiva pooja Fuelwood, Medicinal (Paste of dry leaves powder applied over joints or swelling area)	1	
130	Cinnamomum tamala (B uch.-Ham.) T. Nees and Eberm.	Lauraceae	Tejpat	Lv, Br	T	800- 1200	Edible, Medicinal (Powder of bark use in to treat dental caries and bad order, leave powder with black pepper use in running nose and cold)	0.93	0.67
131	Litsea monopetala (Rox b.) Pers.	Lauraceae	Katmara	Lv, Wd	T	600- 1000	Fodder, Fuelwood	1	
132	Machilus odoratissima (Wall. ex Nees) Nees	Lauraceae		Lv	T	1000 - 1200	Fodder	0.25	
133	Persea duthiei (King ex Hook. f.) Kostermans	Lauraceae	Kaula	Lv	S	1800 - 2000	Fodder	0.33	
134	Phoebe lanceolata Nees	Lauraceae		Lv	S	800- 1100	Fodder	0.33	
135	Paris polyphylla Sm.	Melanthiaceae	Satwa	Rh	H	2000 - 2100	Medicinal (Dried powder of rhizome used in	0.33	0.33

							liver infection and tumor)		
136	Reinwardtia indica Dumort.	Linaceae	Pyoli	Ap	H	1400 - 2000	Fodder, Ornamental	0.25	0.25
137	Woodfordia fruticosa (L.) Kurz	Lythraceae	Dhak	Fl, Wd	S	1200 - 1400	Fuelwood, Medicinal (Infusion of flowers is given to cure urinary disorders. Paste of Root applied over burn scars.)	0.67	0.67
138	Bombax ceiba L.	Malvaceae	Semal	Wp	T	800-1000	Edible, Fuelwood, Fodder, Medicinal (Flower used in face cleaning, Juice of young root used as tonic.)	1.1	1.15
139	Grewia elastica Royle	Malvaceae	Pharsniy	Lv, Wd	T	1200 - 1600	Fodder, Fuelwood,	0.77	
140	Grewia oppositifolia Buch.-Ham. ex D. Don	Malvaceae	Bheemal	Lv, Wd	T	1300 - 1700	Fodder, Fuelwood, Fiber, Agriculture tool	1.57	
141	Melia azedarach L.	Meliaceae	Betan		T	1100 - 1300	Fuelwood, Timber, Tool, Medicinal (Seed oil is used for earache)	1.55	1.44
142	Toona ciliata M. Roem.	Meliaceae	Toon	Lv, Wd	T	1000 - 1300	Fodder, Fuelwood, Timber, Agriculture tool	1.33	

143	Cissampelos pareira L.	Menispermaceae	Pari patel	Lv	C	1200 - 1300	Fodder, Medicinal (Paste of leaves is applied over eyelids to cure conjunctivitis.)	0.33	0.83
144	Tinospora cordifolia (Willd.) Hook. f. and Thomson	Menispermaceae	Giloy	Ap	C	1000 - 1500	Medicinal (Fresh Giloy juice used in treating Dengue fever, cough and cold) also used for cattle tonic	1.33	
145	Mimosa pudica L.	Mimosaceae	Chuimui	Rt	Us	1400 - 1500	Medicinal (Paste of the root applied in scorpion bitten area)	0.33	0.33
146	Ficus auriculata Lour.	Moraceae	Timil	Lv, Fr	T	1000 - 1500	Fodder, Fruit Edible, Medicinal (Roasted fruit used in treatment of diarrhoea), plant leaves used in serving food on holy occasion	1.3	0.85
147	Ficus nemoralis Wall. ex Miq.	Moraceae	Dudhila	Lv	T	900-1300	Fodder, Cattle bedding	0.33	
148	Ficus religiosa L.	Moraceae	Peepal	Lv	T	900-1600	Sacred tree , Medicinal (leaves juice use in toothache)	0.67	
149	Ficus semicordata Buch.-Ham. ex Sm.	Moraceae	Khinu	Lv, Wd, Lt	T	800-1300	Fodder, Fuelwood, Cattle	1.3	

							bedding, Medicinal (Latex of plant applied externally in leprosy)		
150	Ficus palmata Forssk.	Moraceae	Bedu	Lv, Fr. Lt	S	1200 - 1600	Fodder, Fruit Edible, Medicinal (Latex of plant used on to take out spins lodged deeply in the flesh)	0.93	
151	Ficus scandens Roxb.	Moraceae		Lv	C	800- 1000	Fodder	0.33	
152	Morus laevigata Wall. ex Brandis	Moraceae	Shtut	Lv, Wd, Fr	T	1100 - 1500	Fodder, Edible	0.77	
153	Morus serrata Roxb.	Moraceae	Shtut	Lv, Wd, Fr	T	1400 - 1800	Fodder, Edible, Tool, silkworm feeding	1.17	
154	Myrica esculenta Buch.- Ham. ex D. Don	Myricaceae	Kafal	Lv, Wd, Fr	T	1200 - 1800	Fodder, Fruit Edible, Fuel wood, Agriculture Tool, Timber, Cattle bedding	1.2	1.2
155	Myrsine africana L.	Myrsinaceae		Lv	S	1700 - 2100	Fodder	0.33	0.33
156	Syzygium cumini (L.) Skeels	Myrtaceae	Jamun	Lv, Wd, FrF r	T	700- 1000	Fodder, Edible, Fuelwood, Timber, Agriculture tool Medicinal (Fruit used in to treat diabetes, branches used in	1.5	1.5

							whitening teeth)		
157	Boerhavia diffusa (BD) Linn.	Nyctaginaceae	Punarnava	Lv	H	1600 - 1900	Medicinal (Juice of leaves use in pain relief)	0.5	0.5
158	Satyrium nepalense D. Don	Orchidaceae		Bl	H	1700 - 1900	Medicinal (Powder of bulbs is used in malaria)	0.33	0.66
159	Crepidium acuminatum D. Don	Orchidaceae:	Jivak	Bl	H	1900 - 2000	Medicinal (Powder of bulbs is used as tonic in general weakness)	1	
160	Lindenbergia grandiflora (Buch.-Ham.) Benth.	Orobanchaceae		Lv	H	1700 - 1900	Fodder	0.3	0.3
161	Oxalis corniculata L.	Oxalidaceae	Chalmor	Lv	H	1200 - 1800	Medicinal (paste of leaves used in insect bite)	0.5	0.5
162	Bischofia javanica Blume	Phyllanthaceae	Kain	Lv	T	1000 - 1200	Fuelwood	1	1.23
163	Embllica officinalis Gaertn	Phyllanthaceae	Aawla	Wd, Lv, Ed	T	700-1200	Fuelwood, Edible, Sacred, Medicinal (Fruit juice is given to increase the flow of urine, also given in diarrhoea, dysentery and to cure jaundice.)	1.67	
164	Glochidion velutinum Wight	Phyllanthaceae	Gubarmau	Wd, Lv	S	900-1300	Fodder, Fuelwood	1	
165	Cedrus deodara (Roxb. ex D. Don) G. Don	Pinaceae	Deyari	Wp	T	1850 - 2100	Ornamental, Timber, Fuelwood, Sacred, Medicinal (Oil	2	1.8

							extracted from heart wood is massaged over joints pain, and itching.)		
166	Pinus roxburghii Sarg.	Pinaceae	Chir	Wp	T	1000 - 1500	Fuelwood, Timber, Ornamental, Edible, Cattle bedding Medicinal (Resin is used in heel cracks, skin disease, sprain, swelling, cuts and wounds)	1.6	
167	Plantago erosa Wall.	Plantaginaceae	Lahuryia	Ap	H	1500 - 1600	Fodder, Medicinal (Paste of leaves use in insect bite and rashes)	0.67	0.67
168	Andropogon distans Nees	Poaceae		Ap	H	1400 - 1800	Fodder	0.33	0.45
169	Arthraxon lanceolatus (Roxb.) Hochst.	Poaceae		Ap	H	1300 - 1700	Fodder	0.33	
170	Arundinaria falcata Nees	Poaceae		Ap	H	1200 - 1400	Fodder	0.25	
171	Arundinella nepalensis Trin.	Poaceae	Tutnaliya Ghas	Ap	H	1200 - 1400	Fodder, Fencing	1	
172	Chrysopogon aciculatus L.	Poaceae	Goriya Ghas	Ap	H	800-1000	Fodder	0.33	
173	Cynodon dactylon (L.) Pers.	Poaceae	Doob	Ap	H	1200 - 1700	Fodder, Sacred, Medicinal (The expressed juice of plant applied to bleeding	1	

							cuts and wounds. Decoction of root and leaves is used in diarrhoea)		
174	Chrysopogon gryllus (L.) Trin.	Poaceae		Ap	H	1200 - 1500	Fodder	0.33	
175	Digitaria cruciata (Nees ex Steud.) A. Camus	Poaceae		Ap	H	1600 - 1700	Fodder	0.33	
176	Digitaria stricta Roth	Poaceae		Ap	H	1400 - 1700	Fodder	0.33	
177	Dendrocalamus strictus (Roxb.) Nees	Poaceae	Bans	Ap	H	1000 - 1400	Fodder, Edible, Fencing, furniture and use in making basket, mats, sticks and agriculture implements	1.75	
178	Echinochloa colonum L.	Poaceae		Ap	H	800-1000	Fodder	0.33	
179	Eleusine indica (L.) Gaertn	Poaceae		Ap	H	800-1000	Fodder	0.33	
180	Eulaliopsis binata (Retz.) C.E. Hubb.	Poaceae	Babil Ghas	Ap	H	1700 - 1800	Fodder	0.33	
181	Heteropogon contortus (L.) P. Beauv. ex Roem. and Schult.	Poaceae	Kumeria Ghas	Ap	H	800-1200	Fodder	0.33	
182	Imperata cylindrica (L.) P. Beauv.	Poaceae	Siroy Ghas	Ap	H	1200 - 1600	Fodder	0.33	
183	Koeleria cristata (L.) Pers.	Poaceae		Ap	H	1300 - 1500	Fodder	0.33	
184	Oplismenus compositus (Linn.)P.Beauv	Poaceae		Ap	H	1200 - 1400	Fodder	0.33	
185	Oplismenus hirtellus (L.) P. Beauv.	Poaceae		Ap	H	1300 - 1700	Fodder	0.33	
186	Oplismenus undulatifolius Str. - Wint.	Poaceae		Ap	H	1500 - 1600	Fodder	0.33	

187	<i>Pennisetum orientale</i> Rich.	Poaceae	Bimosiya	Ap	H	1200 - 1400	Fodder	0.33	
188	<i>Saccharum spontaneum</i> L.	Poaceae	Kans	Ap	H	1000 - 1400	Fodder	0.67	
189	<i>Themeda anathera</i> (Nees ex Steud.)	Poaceae		Ap	H	1200 - 1700	Fodder	0.33	
190	<i>Themeda arundinacea</i> (Roxburgh) A. Camus	Poaceae		Ap	H	1100 - 1300	Fodder	0.33	
191	<i>Rumex hastatus</i> D. Don	Polygonaceae	Bhilmora		S	1200 - 1500	Fodder, Medicinal (Leaf extract of plant applied on wound and cut to check bleeding)	0.83	0.50
192	<i>Bistorta amplexicaulis</i> (D.Don) Greene	Polygonaceae			H	1900 - 2000	Medicinal (Root use in making herbal tea)	0.33	
193	<i>Polygonum capitatum</i> Buch.-Ham. ex D.Don.	Polygonaceae	Pathar Phool		H	1500 - 1800	Medicinal (Juice of plant used in stomach disorders)	0.33	
194	<i>Drynaria propinqua</i> (Wall. ex Mett.) Sm.	Polypodiaceae		Rh	F	1900 - 2000	Medicinal (Paste of rhizome applied on fracture bone of cattle)	0.25	0.25
195	<i>Lysimachia alternifolia</i> Wall.	Primulaceae		Ap	H	1600 - 1700	Fodder	0.33	0.33
196	<i>Pteris wallichiana</i> Agardh	Pteridaceae		Fro nds	F	1900 - 2100	Medicinal (Fron d paste applied on skin infection)	0.33	0.30
197	<i>Adiantum edgeworthii</i> Hook.	Pteridaceae		Lv	F	1600 - 2000	Medicinal (Paste of leaves applied on forehead to	0.33	

							relives headache)		
198	Adiantum venustum D.Don	Pteridaceae		Lv	F	1900 - 2000	Medicinal (leaf paste use in swollen wound)	0.25	
199	Adiantum incisum Forss k.	Pteridaceae		Lv	F	1600 - 1800	Medicinal (Leaf juice given to new mother to stop excess bleeding after child birth)	0.25	
200	Pteris cretica L.	Pteridaceae		Ap	F	1400 - 2000	Fodder	0.33	
201	Thalictrum foliolosum DC.	Ranunculaceae	Mamera	Lv, Rt	H	1600 - 1900	Fodder, Medicinal (Juice of Roots is given in jaundice and stomach- ache)	0.77	0.47
202	Clematis acuminata DC.	Ranunculaceae	Kawali Bel	Lv	C	1600 - 2000	Fodder,	0.33	
203	Clematis buchaniana DC.	Ranunculaceae		Lv	C	1800 - 2100	Fodder, Medicinal (leaves juice applied externally in cuts and wounds)	0.33	
204	Rhamnus purpureus Edgew	Rhamnaceae		Wd, Lv	S	2000 - 2100	Fuelwood, Fodder, Tool	0.75	0.75
205	Ziziphus mauritiana La m.	Rhamnaceae	Beri	Fr	S	1000 - 1500	Edible, Fencing	0.75	
206	Cotoneaster acuminatus Lindl.	Rosaceae			S	1400 - 1800	Fodder, Tool	0.58	0.78
207	Cotoneaster bacillaris Wall. Ex Lindl.	Rosaceae		Lv	S	1900 - 2100	Fodder, Tool	0.58	

208	Cotoneaster microphyllus Wall. ex Lindl.	Rosaceae	Raunsh	Lv	S	2000 - 2100	Fodder, Tool	0.68	
209	Fragaria indica Andrews	Rosaceae	Bhikafal	Fo, Fr	H	1800 - 2100	Edible, Fodder	0.33	
210	Prunus cerasoides D. Don	Rosaceae	Paya	Wd, Lv	T	1400 - 1700	Fodder, Fuelwood, Sacred, Medicinal (Paste of bark applied in skin to treat herpes, dried seed powder use to treat kidney stone)	1.44	
211	Pyrus pashia Buch.-Ham. ex D. Don	Rosaceae	Mehal	Lv, Wd, Fr	T	1200 - 1700	Fodder, Fuelwood, Edible, Medicinal (Fruit juice used in abdominal pai and anemia)	1.11	
212	Prinsepia utilis Royle	Rosaceae	Jhatalu	Wp	S	1500 - 1900	Fodder, Edible, Fencing	0.37	
213	Pyracantha crenulata (D. Don) M. Roem.	Rosaceae	Ghingharu	Ap	S	1400 - 1800	Fodder, Fuelwood, Edible, Medicinal (powder of dried fruit with yoghurt used in treatment of bloody dysentery)	1.17	
214	Rubus ellipticus Sm.	Rosaceae	Hisalu	Lv,	S	1500 - 1800	Edible, Fodder, Fencing, Medicinal (Juice of fruits is used in cholera.)	0.75	

215	Rubus paniculatus Sm.	Rosaceae	Jogi Kafal	Lv, Fr	S	1600 - 1800	Edible, Fodder, Fencing Medicinal (Paste of bark use in treatment of scabies)	0.78	
216	Rosa brunonii Lindl	Rosaceae	Kunja	Fl	H	1600 - 2000	Ornamental , Edible, Medicinal (Flower petal decoction with sugar used as coolant	1	
217	Leptodermis lanceolata Wall	Rubiaceae	Padera	Ap	S	1400 - 1700	Fodder, Medicinal (Leaves paste applied externally on head- ache.)	0.33	0.53
218	Randia tetrasperma (Wall. ex Roxb.) Benth. and Hook.f. ex Brandis	Rubiaceae	Ghanaul	Lv, Rt	S	1600 - 1900	Fodder, Medicinal (Root extract use in treatment of jaundice)	0.43	
219	Galium aparine L.	Rubiaceae		Ap	H	1700 - 1900	Fodder	0.33	
220	Rubia cordifolia L.	Rubiaceae	Manjistha	Wp	H	1500 - 1800	Fodder, Medicinal (leaves decoction use as blood purifier, also used in bite wounds)	1	
221	Aegle marmelos (L.) Corrêa	Rutaceae	Bel	Wp	T	700- 900	Fuelwood, Fodder, Edible, Tool, Timber,	2.25	1.24

							Sacred, Medicinal (Leaves extract used in fever, skin diseases and intestinal worms. Fruit juice is given in high blood pressure. Root powder used in diabetes.)		
222	Boeninghausenia albiflora (Hook.) Rchb. ex Meisn.	Rutaceae	Pisumar	Ap	S	1400 - 1600	Fodder, Medicinal (Paste of leaves is applied on scalp to remove dandruff and hair fall)	0.35	
223	Murraya koenigii L. Sprengel	Rutaceae	Kari patta	Wp	S	800-1000	Fuelwood, Fodder, Edible, Medicinal (Paste of leaves applied in ringworm infection)	0.78	
224	Zanthoxylum armatum DC.	Rutaceae	Timur	Wp	S	800-1200	Edible, Fodder, Sacred, Medicinal (Leaves and fruits used as mouth wash, toothache. Twigs are used for teeth cleaning.)	1.58	

225	Meliosma dilleniaefolia Walp	Sabiaceae		Wd, Lv	T	1800 - 2000	Fodder, Fuelwood	0.33	0.33
226	Populus ciliata Wall. ex Royle.	Salicaceae		Wd	T	1300 - 1500	Timber	0.58	0.83
227	Xylosma longifolia Clos	Salicaceae	Gardar	Lv, Wd	T	700-900	Fuelwood, Fodder, Tool	1.08	
228	Acer oblongum Wall. ex DC.	Sapindaceae		Lv, Wd	T	1900 -200	Sacred, Tool, Timber, Fuelwood	1.03	1.05
229	Aesculus indica (Wall. ex Cambess.) Hook.	Sapindaceae	Pangar	Lv, Fr, Wd	T	1200 - 1600	Edible, Fuelwood, Fodder	0.93	
230	Sapindus mukorossi Gaertn.	Sapindaceae	Reetha	Fr, Lv, Wd	T	1000 - 1300	Fodder, Medicinal (Fruit used as a shop substitute in dandruff)	1.18	
231	Diploknema butyracea (Roxb.) H. J. Lam	Sapotaceae	Chyura	Lv, Fr, Wd	T	900-1000	Fodder, Edible, Fuelwood, Medicinal (Seed fat use in cut, chapped hand and feet during winter)	2.02	2.02
232	Bergenia ciliata (Haw.) Sternb.	Saxifragaceae	Silfoda	Rh	H	1400 - 1700	Medicinal (Decoction of rhizome is given orally to cure kidney stone)	1.00	1.00
233	Verbascum thapsus L.	Scrophulariaceae	Akalbir	Lv	H	1700 - 1800	Medicinal (Juice of leaves is instilled in eyes to cure cataract)	0.33	0.33
234	Smilax aspera L.	Smilacaceae	Kukurdar	Wp	C	1800 - 2100	Fodder, Medicinal (Ripe fruit use in skin fungal infection)	0.67	0.50

235	Smilax vaginata Decne	Smilacaceae		Wp	C	1900 - 2100	Fodder	0.33	
236	Datura stramonium L.	Solanaceae		Seed	S	1700 - 1800	Medicinal (The paste prepared from roasted seeds of drug in mustard oil is applied on joint pain)	0.17	0.25
237	Datura alba F.Muell.	Solanaceae		Lv	S	1000 - 1200	Medicinal (The paste of leaves with mustard oil is applied on rheumatism)	0.17	
238	Solanum nigrum L.	Solanaceae	Makoi	Wp	S	1200 - 1500	Medicinal (Juice of whole plant applied in Ringworm)	0.33	
239	Solanum xanthocarpum Schrad. and H. Wendl.	Solanaceae	Kantari	Fr	S	1200 - 1600	Medicinal (Fruit juice applied in skin affected by allergy and also in insect bite)	0.33	
240	Symplocos paniculata (Thunb.) Miq.	Symplocaceae	Lodh	Lv, Wd	S	1700 - 2100	Fuelwood, Fodder	1.00	1.00
241	Daphne papyracea Wall. ex Steud.	Thymelaeaceae		Lv	S	1800 - 2100	Fodder	0.33	0.33
242	Boehmeria rugulosa Wedd.	Urticaceae	Gethi	Lv, Wd, Br	T	700- 900	Fodder, Fuelwood, Tool, Medicinal (Bark paste useful in bone fracture.)	1.93	0.75

243	Debregeasia longifolia (Blume.f.) Wedd.	Urticaceae	Tusari	Lv, Wd, Fr	S	1200 - 1500	Fuelwood, Edible, Fodder, Medicinal (juice of leaves applied to skin affected by scabies)	1.0	
244	Girardinia diversifolia (Link.) Friis	Urticaceae	Syunakandali	Wp	S	1600	Fiber, Medicinal (leaf apply on joint pain, juice of root given as treatment of constipation)	0.58	
245	Lecanthus peduncularis (Wall. ex Royle) Wedd.	Urticaceae		Lv	H	1800 - 2000	Fodder	0.67	
246	Pilea scripta (Buch.-Ham. ex D. Don) Wedd	Urticaceae		Lv	H	1700 - 1800	Fodder	0.33	
247	Urtica parviflora Roxb.	Urticaceae	Siyun	Wp	H	1700 - 1900	Fodder, Edible, Medicinal (leaf applied in joint pain)	0.43	
248	Elatostema sessile J.R.F orst. and G.Forst.	Urticaceae		Ap	H	1500 - 1600	Fodder	0.33	
249	Valeriana wallichii DC.	Valerianaceae	Samyo	Ro	H	1700 - 2000	Sacred, Medicinal (Decoction of Root use in treatment of paralysis, paste of root use in fungal infection)	0.58	0.58
250	Lantana camara L.	Verbenaceae	Kuri	Wd	S	700-1000	Fuelwood	0.33	0.33
251	Viola pilosa Blume	Violaceae	Vanfsa	Fl,	H	1900 - 2000	Edible, Medicinal (Flower	0.67	0.67

							paste use in burning sensation)		
252	Parthenocissus himalayana (Royle) Planch.	Vitaceae		Ap	C	2000 - 2100	Fodder, Edible	0.67	0.50
253	Vitis heyneana Roem. and Schult.	Vitaceae		Ap	C	1800 - 2100	Fodder	0.33	0.33
254	Hedychium spicatum Sm.	Zingiberaceae	Van haldi	Rh	H	1900 - 2100	Medicinal (Powder of rhizome is used in asthma, respiratory problems and cough)	0.5	0.41
255	Roscoea purpurea Sm.	Zingiberaceae	Kakoli	Ro	H	1900 - 2100	Medicinal (Dry root powder with milk use as Tonic)	0.33	

Abbreviations Used- C- Climber; H- Herb; S- Shrub; T- Tree; Ap- Aerial part, AR- altitudinal range, part, Bl- Bulbs; Br- Barks; Fl- Flowers; Fr- Fruits; Lt- Latex; Lv- Leaves; Rh- Rhizomes, Rs- Resin; Rt- Roots; Sd- Seeds, St- Stems; Tb- Tubers; Wd- Wood; WP- Whole plant

Use value of plants ranged from 0.10 to 2.25 it was divided into three categories viz. high use value (1.5-2.25) medium use value (0.85-1.5) and low use value (0.10-0.85) . Plants having high use value showed huge pressure because people used them very strongly for different purpose. A total 18 plant fall under high use value *Aegle marmelos*, *Quercus leucotrichophora* *Diploknema butyracea*, *Cedrus deodara*, *Boehmeria rugulosa*, *Dendrocalamus strictus*, *Mallotus philippensis*, *Emblica officinalis*, *Celtis australis*, *Ougeinia oojainensis*, *Pinus roxburghii*, *Zanthoxylum armatum*, *Melia azedarach*, *Rhododendron arboretum*, *Grewia oppositifolia*, *Syzygium cumini*, *Terminalia chebula*, *Quercus glauca*, 46 plants were reported to moderate use value

Terminalia bellirica , *Prunus cerasoides*, *Shorea robusta*, *Berberis aristata*, *Toona ciliata*, *Tinospora cordifolia*, *Ficus auriculata*, *Ficus semicordata*, *Berberis asiatica*, *Pyrus pashia* , *Bombax ceiba*, *Cupressus torulosa*, *Xylosma longifolia*, *Acer oblongum*, *Semecarpus anacardium*, *Ilex dipyrena*, *Carpinus viminea*, *Albizia lebbeck*, *Swertia chirayita*, *Vitex negundo*, *Litsea monopetala*, *Malaxis acuminata*, *Bischofia javanica*, *Glochidion velutinum*, *Arundinella nepalensis* , *Cynodon dactylon*, *Rosa brunonii*, *Rubia cordifolia*, *Bergenia ciliata*, *Symplocos paniculate* *Debregeasia longifolia*, *Rhus cotinus*, *Bauhinia variegata*, *Cinnamomum tamala*, *Ficus palmata*, *Aesculus indica*, *Alnus nepalensis*, *Anogeissus latifolia* , *Viburnum mullaha* and 191 plants under moderate use value. Among families *Sapotaceae* *Fagaceae* *Pinaceae* *Cannabaceae* *Myrtaceae* *Meliaceae* *Dryopteridaceae* and *Combretaceae* depicted high family use value. Table 3 depicted the comparison of present findings with studies in West Himalaya According

to Uttarakhand Medicinal Plants Database, 1127 species belonging to 153 families used medicinally. Pandey et al., (2017) documented plant species for different disorders, such as 14 species for jaundice, diarrhoea (12 species), and dysentery (16 species). Kala (2020) documented 82 plant species used to treat seven types of respiratory diseases such as asthma, bronchitis, tuberculosis, pneumonia, influenza, lung disorder,

and cough and cold. Ojha et al., (2020) recorded 70 species belonging to 64 genera and 35 families for curing various human ailments by the local community, of which 21 species were used most extensively in the traditional health care system. Tiwari et al., (2020) reported 56 plant species belonging to 34 families ethnobotanically important from Kumaun Himalaya.

Table 2- Ethnobotanical studies carried out in the Uttarakhand, Western Himalaya

Study site	Family	Genera	Species	References
Urgam valley			115	Bisht et al. (2006)
Ukhimath			60	Semwal et al., (2010)
Buffer zone, NDBR			73	Maikhuri et al., (2010)
Pindari valley			242	Rawal and Rawat (2012)
Kedarnath Forest			189	Rawat et al., (2013)
Pauri Garhwal			138	Bisht and Sharma (2014)
Almora	38		58	Mehra et al., (2014)
Betalghat, Nainital	76	160	186	Pandey et al., (2016)
Chakrata	30	47	54	Kumar et al., (2019)
Almora, Pithoragarh, Nainital	34		56	Tiwari et al., (2020)
Bageshwar	35	64	70	Ojha et al., (2020)
Bhatwari, Uttarkashi			60	Monika et al., (2020)
Rudraprayag	38	90	113	Rautela and Tiwari (2021)

Rautela and Tiwari (2021) documented a total of 113 weed species belonging to 90 genera and 38 families having various folk uses in Rudraprayag.

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