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## Floristic list and their ecological characteristics, of plants at village Sherpao District Charsadda, KP-Pakistan

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### Abstract

Floral diversity of village Sherpao district Charsadda comprised a total of 104 plant species belonging to 46 families and 95 genera. The leading families were Fabaceae, Asteraceae and Poaceae contributed by 8 species each (7.69%) followed by Solanaceae contributed by 7 species (6.73%), while Euphorbiaceae and Lamiaceae contributed by 5 species each (4.80%) followed by Polygonaceae contributed by 4 species (3.84%). Amaranthaceae, Amaryllidaceae, Boraginaceae, Malvaceae, Moraceae, Myrtaceae and Rutaceae contribute by 3 species each (2.88%) which is followed by Apiaceae, Cannabaceae, Caryophyllaceae, Nyctaginaceae, Plantaginaceae, Mimosaceae and Ranunculaceae contributed 2 species each (1.92%). Rest of 24 families contributed by 1 species each (0.96%). The most dominant life form was therophytes having 35 species (33.65%) followed by chamaephyte having 17 species (16.34%) followed by nanophanerophyte contributed by 15 species. Hemicryptophyte contributed by 13 species (12.5%) followed by microphanerophyte having 10 species (9.61%), mesophanerophyte having 9 species (8.65%) followed by geophyte which contributed 3 species (2.88%) and megaphanerophyte contributed by 2 species (1.92%). Most dominant habit of flora were herbs having 77 species (74%) followed by trees contributed by 18 species (17.30%) and shrubs having 9 species (8.65%). Leaf size spectra of the flora showed that the most dominant leaf size class were microphyll having 38 species (36.53%) followed by nanophyll contributed by 32 species (30.76%), mesophyll represented 22 species (21.15%) and leptophyll contributed by 12 species (11.53%). Based on habitat 77 species (74%) were xerophytic in nature followed by 14 species (13.46%) in wet condition and 13 species (12.5%) were present in both conditions. In 104 plant species 85 were non-spiny and 19 were spiny.

**Keywords:** Floristic Studies, Ecological Characteristics, Plants, Sherpao, District Charsadda, Pakistan

### 1. Introduction

#### Location of Area

Charsadda is a district in the Khyber Pakhtunkhwa province of Pakistan. It was a part of the Peshawar ex-metropolitan region. Pashtuns make up majority of the population of the district. Charsadda District is situated in the East of Khyber Pakhtunkhwa province, Pakistan and bounded to district Mardan in North, with East in Nowshera, Peshawar district in South and Mohmand agency (FATA) to the West. Charsadda is situated on Latitude of 34.15°N and Longitude of 71.73°E. Present study was carried out in Union council Sherpao which is a Village of Tehsil Tangi. This union council is now divided into sub union councils Sherpao, located in the north of Charsadda district.

#### Population of Area

According to Censuses 1998 total population of Charsadda was recorded 1.626 million (1,626,000), with area 996 km<sup>2</sup> (385 square miles) and density is 1026/km<sup>2</sup> (2660/seq. mile). According to geographic center Charsadda, the district is 282 meter above from sea level in elevation. Studied area was mostly rural by nature and mostly the area is plain with 282 meter above from sea level in elevation. It lies about 29 kilometers from provincial capital city Peshawar at an altitude of 276 meters (906 ft). According to the censuses of 1998 the total population of Village Sherpao is about 26000 but later a rapid increase was observed in population due to which the exact position of population cannot be mentioned here.

### Climatology and Soil of Area

The areas are mostly rural therefore temperatures are varying from place to place. In summer the temperature is too hot and in winter the temperature is usually too cold. Hottest month is June with a temperature of about 44 °C and the coldest month is January with a temperature of about 05 °C- 10 °C. The temperature here averages 22.5 °C.

In studied area, there is sufficient amount of rainfall occur throughout the year. The average annual rainfall is 460 mm. the driest month is June, with 11 mm of rainfall with an average of 82 mm, the most precipitation falls in the month of August. The difference between the driest month and the wettest month is 71 mm. Soil of studied area having different types of soil texture therefore vegetation also is of different type. Some of the studied area has sandy soil and some area has loamy soil. In studied area the sandy loam soil occurred therefore dense vegetation occur in studied area.

### Flora of the Area

Flora of village Sherpao District Charsadda comprised a lot of green flora. There are different types of vegetation found in district Charsadda including trees, herbs and shrubs. Among the trees different species are present belonging to different families and genera. In the studied area *Dilbergiasissoo*, *Morusalba*, *Moruslavigata*, *Morusnigra*, *Acacia nilotica*, *Acacia modesta*, *Eucalyptus lanceolata*, *Melia azedarich L.*, *Ailenthusaltissima*, *Populusciliata*, *Ficuscarica*, *Ficuselastica*, *Citrus medica*, *Ziziphusjuba*, *Pronusdomestica*, *Bombaxciebaare* used as fuel and furniture purpose etc.

### Material and methods

In order to carry out the floral diversity of village Sherpao, District Charsadda, Khyber Pakhtunkhwa, Pakistan. A research project was undertaken for the collection of the plant specimens to explore the floristic structure of Village Sherpao, district Charsadda. The study was conducted from June-2015 to June-2016. The tools during research work were map of the area, note book, pencil, plant presser, old newspaper, polythene bags, knife, compass and digital camera. The plants were collected during different period of June-2015 to June-2016.

### Floristic structure and ecological Characteristics

Floristic investigation was occurred in district Charsadda from June 2015 – June 2016. Plants were collected from various sites of the village which were included in Sherpao. After collection they were preserved in proper and precise way. These specimens were pasted on herbarium sheets using size of 46x16 cm (Length x Width). They were kept in herbarium and then identified with the help of local flora of Pakistan. After identification a complete list was made alphabetically and deposited in Herbarium, Department of botany Bacha Khan University Charsadda.

### Result and Discussion

#### Floristic list

Biological assessment like floral composition, diversity of species and the analysis of structural are necessary for the management of forest, helpful in exploring ecology of forest and for understanding the functions of the ecosystem. The major goal of the study was carried out the accessible flora of the studied area. A total of 104 plant species belonging to 46 families and 95 genera were collected from the research area. The leading families were Fabaceae, Asteraceae and Poaceae contributed by 8 species each (7.69%) followed by Solanaceae contributed 7 species (6.73%) while Euphorbiaceae and Lamiaceae contributed by 5 species each

(4.80%) and Polygonaceae contributed by 4 species (3.84%). Amaranthaceae, Amaryllidaceae, Boraginaceae, Malvaceae, Moraceae, Myrtaceae and Rutaceae contribute by 3 species each (2.88%) followed by Apiaceae, Cannabaceae, Caryophyllaceae, Nyctaginaceae, Plantaginaceae, Mimosaceae and Ranunculaceae contributed 2 species each (1.92%) and rest of 24 families contributed 1 species each (0.96%). Total of 19 species were spiny and 85 were non-spiny. Dominant habit form of flora were herbs having 77 species (74%) followed by trees contributed 18 species (17.30%) and shrubs having 9 species (8.65%). Present findings show that the most species were present in Dry condition having 77 species (74%) followed by wet having 14 species (13.46%) and 13 species (12.5%) were present in both condition. Khan *et al.* 2013<sup>[7]</sup> reported 91 plant species which showed that Asteraceae, Poaceae and Cucurbitaceae are the leading families reported from shiekhmaltoon town district Mardan, Pakistan. Badshah *et al.*, (2013)<sup>[2]</sup> and Ali *et al.*, (2016)<sup>[1]</sup> also reported that Asteraceae and Poaceae as leading families in their study work. Sher *et al.*, (2011)<sup>[19]</sup> also reported Poaceae as a dominant family in their work which are similar to our present findings.

#### Life form

Life form and leaf size spectra are important key in exploring the flora of an area during the studies. Life form can be considered as symbol or direction of shallow and deep climate. Therefore study of life form and leaf size is an important type of vegetation description (Khan *et al.*, 2013)<sup>[7]</sup>. The dominant life form was therophytes having 35 species (33.65%) followed by chamaephyte having 17 species (16.34%) which show that the study area are under heavy biotic pressure due to unsustainable use, over grazing and deforestation etc of the flora of study area. According to Musharaf *et al.* (2013)<sup>[7]</sup> Life form and leaf size spectra indicates climatic and human disturbance of a particular area. Nanophanerophyte contributed by 15 species (14.42%) followed by hemicryptophyte contributed by 13 species (12.5%). Microphanerophyte having 10 species (9.61%) followed by mesophanerophyte contributed by 9 species (8.65%), geophyte contributed by 3 species (2.88%) and megaphanerophyte contributed by 2 species (1.92%). Saadya *et al.* (2014) also showed that in unfavorable and dry condition the life form are mostly found therophytes followed by chaemaephytes. Sher *et al.*, (2011)<sup>[19]</sup> also showed therophytes as dominant leaf size class from Lahore, District Sawabi, Pakistan. Rafay *et al.*, (2013)<sup>[12]</sup> also showed therophytes as dominant class from their study area. Inayat *et al.*, (2014)<sup>[6]</sup> also reported therophytes followed by hemicryptophytes from District Charsadda, Pakistan which are as similar work to our present findings. Hemicryptophytes and phanerophytes show the dominancy at high altitude (Hussain and Ishtiaq, 2009)<sup>[5]</sup>.

#### Leaf size

Leaf classes are checked according to Raunkiaer's diagram. These leaf classes are of four types. First on have 25 sq. mm in size which is lowest and every class to next class are greater than the previous class nine times. Leaf size of the flora showed that the most dominant leaf size class were microphyll having 38 species (36.53%) followed by nanophyll contributed by 32 species (30.76%). Mesophyll represented 22 species (21.15%) and Leptophyll contributed by 12 species (11.53%). Leaf size class variation are present seasonally due to the presence of annual and geophyte buds but the perennials and evergreen retain the same status of leaf

size class. Malik *et al.*, (2007) <sup>[10]</sup> reported microphyll and nanophyll as the dominant leaf size from Ganga Chotti and Bedori Hills. Sher *et al.*, (2007) <sup>[20]</sup> also pointed out leaf size spectra of plants as microphyll followed by mesophyll and nanophyll from Chagharzai Valley, District Buner. The findings of Khan *et al.*, (2007) also in line with our findings as they reported the dominance of microphyll followed by mesophyll and nanophyll from northern areas of Pakistan. In desert climates mainly the leaf size are nanophanerophytes (Ashby 1963).

### Seasonal variation

Seasonal variation showed that 80 plant species (76.92%)

were present in spring, followed by 75 plant species (72.11%) in summer, 39 plant species (37.5%) in autumn and 33 plant species (31.73%) in winter season. In all season therophytes were the most dominant life form followed by chamaephyte due to the presence of favorable growing season in studied area. In early spring the annual plants are grown in foremost figure and also in early summer season. The dominance of therophytes occur due to favorable conditions as suggested by others Badshah *et al.*, (2013) <sup>[2]</sup>, Rafay *et al.*, (2013) <sup>[12]</sup>, Manhas *et al.*, (2010) and Sher *et al.*, (2011) <sup>[19]</sup> which work are in line to our present findings.

**Table 1:** Floristic list and ecologic characteristic of village Sherpao district Charsadda

S. No	Botanical Name	Family	Local Name	Seasonal				Habit	Habitat	Life form	Leaf size	Spine
				A	W	SP	SM					
1	<i>Dicliptera roxburghiana</i> Nees	Acanthaceae	Knot Known	-	-	-	+	Hb	W	Nap	Mp	-
2	<i>Alternanthera pungens</i> Kunth	Amaranthaceae	Spin Ghany	+	-	-	+	Hb	D	Nap	Mp	+
3	<i>Achyranthes aspera</i> L.	Amaranthaceae	Knot Known	+	-	-	+	Hb	D	Nap	Mep	+
4	<i>Amaranthus viridis</i> L.	Amaranthaceae	Ganhar	-	-	-	-	Hb	D	The	Mep	-
5	<i>Allium sativum</i> L.	Amaryllidaceae	Ooga	-	-	+	-	Hb	D	The	Mp	-
6	<i>Allium sicutum</i> Ucria	Amaryllidaceae	ZangaliPyaz	-	-	+	-	Hb	D	The	Mp	-
7	<i>Chenopodium ambrosioides</i> L.	Amaryllidaceae	Kakarchati	-	-	+	-	Hb	W & D	The	Np	-
8	<i>Mangifera indica</i> L.	Anacardiaceae	Aam	+	+	+	+	Tr	D	Mesp	Mep	-
9	<i>Calendula arvensis</i> M. Bieb.	Asteraceae	Ziar Guly	-	-	+	-	Hb	D	The	Np	-
10	<i>Conyza canadensis</i> (L.) Cronquist	Asteraceae	Kharboty	-	-	+	-	Hb	D	Cha	Mp	-
11	<i>Carthamus oxyacantha</i> M. Bieb.	Asteraceae	Kareza	-	-	+	-	Hb	D	Nap	Mp	+
12	<i>Sonchus oleraceus</i> L.	Asteraceae	Shodapay	-	-	+	-	Hb	D	Cha	Mep	+
13	<i>Xanthium strumarium</i> L.	Asteraceae	Geshke	-	-	+	-	Hb	D	The	Mep	+
14	<i>Parthenium hysterophorus</i> L.	Asteraceae	Lewany Boty	+	-	+	+	Hb	W & D	Mip	Mp	-
15	<i>Cousinia prolifera</i> Jaub. & Spach	Asteraceae	Spin Panre	-	-	+	Hb	D	Hem	Mp	+	
16	<i>Filago panic</i> (Degen & Hervier) Chrtk & Holub	Asteraceae	Ziargoly	-	-	-	+	Hb	D	Hem	Lep	+
17	<i>Coriandrum sativum</i> L.	Apiaceae	Dhania	-	-	+	+	Hb	W & D	Nap	Lep	-
18	<i>Psammogeton bitermatum</i> Edgew.	Apiaceae	Zangali Sperky	-	-	-	+	Hb	D	Nap	Lep	-
19	<i>Nerium oleander</i> L.	Apocynaceae	GhanderChal	+	+	+	+	Sb	D	Nap	Np	-
20	<i>Cynoglossum lanceolatum</i> Forssk.	Boraginaceae	Pulpulak	-	-	-	+	Hb	W	The	Mp	-
21	<i>Noneaedege worthii</i> A. DC.	Boraginaceae	KarghanoMewa	-	-	+	+	Hb	D	Cha	Np	-
22	<i>Heliotropium strigosum</i> Willd.	Boraginaceae	Not Known	-	-	-	+	Hb	D	Cha	Np	-
23	<i>Lepidium didymum</i> L.	Brassicaceae	Skha Boty	-	-	+	+	Hb	W & D	Hem	Lep	-
24	<i>Opuntia dillenii</i> (Ker Gawl.) Haw.	Cactaceae	Zuqam	+	+	+	+	Sb	D	Nap	Np	+
25	<i>Cannabis sativa</i> L.	Cannabaceae	Baang	+	-	+	+	Hb	W & D	Mip	Np	-
26	<i>Celtis caucasica</i> Willd.	Cannabaceae	Zangali Gurgura	+	+	+	+	Tr	D	Mesp	Mp	-
27	<i>Spergula arvensis</i> L.	Caryophyllaceae	Speen Guly	-	-	-	+	Hb	D	Hem	Lep	-
28	<i>Stellaria media</i> (L.) Vill.	Caryophyllaceae	Speen Stargy	-	-	+	+	Hb	W	Cha	Mp	-
29	<i>Convolvulus arvensis</i> L.	Convolvulaceae	Prewata	-	-	+	+	Hb	W & D	The	Np	-
30	<i>Diospyros kaki</i> L. f.	Ebenaceae	Amlook	+	+	+	+	Tr	W & D	The	Mep	-
31	<i>Chrozophoratinctoria</i> (L.) A.Juss.	Euphorbiaceae	Lingaty	-	-	+	+	Hb	D	The	Mep	-
32	<i>Euphorbia hirta</i> L.	Euphorbiaceae	Nary Shodapay	-	-	+	+	Hb	D	Cha	Np	-
33	<i>Euphorbia serrata</i> L.	Euphorbiaceae	Mandano	-	-	+	-	Hb	D	The	Np	-
34	<i>Sapium sebiferum</i> (L.) Roxb.	Euphorbiaceae	Zangali Shawa	+	+	+	+	Tr	D	Mesp	Mep	-
35	<i>Ricinu scommuni</i> sL.	Euphorbiaceae	Aranda	+	+	+	+	Sb	D	Cha	Mep	-
36	<i>Cassia fistula</i> L.	Fabaceae	Landes	+	+	+	+	Tr	D	Mesp	Mep	-
37	<i>Lathyrus aphaca</i> L.	Fabaceae	Chelo	+	-	+	-	Hb	D	The	Np	-
38	<i>Melilotusindica</i> (L.) All.	Fabaceae	Lewany	-	-	+	-	Hb	D	The	Np	-
39	<i>Medicago denticulata</i> Willd.	Fabaceae	Peshitary	-	-	+	-	Hb	D	The	Np	-
40	<i>Trifolium alexandrinum</i> L.	Fabaceae	Raksha	-	-	+	-	Hb	W	The	Np	-
41	<i>Vicia sativa</i> L.	Fabaceae	Marghyhpa	-	-	+	+	Hb	D	The	Np	-
42	<i>Zorniadiphylla</i> (L.) Pers.	Fabaceae	Zangali Mattar	-	-	+	+	Hb	D	The	Np	-
43	<i>Fumaria indica</i> (Hausskn.) Pugsley	Fumariaceae	Papra	-	-	+	-	Hb	W	The	Np	-
44	<i>Geraniummaculatum</i> L.	Geraniaceae	Gantaguly	-	-	-	+	Hb	D	The	Mep	-
45	<i>Centauriumcentaurioides</i> (Roxb.) S.R.Rao & Hemadri	Gentianaceae	Jaro Gul	-	-	+	-	Hb	W & D	The	Np	-
46	<i>Linumcorymbulosum</i> Rchb.	Lamiaceae	Allum	-	-	-	+	Hb	D	The	Lep	-
47	<i>Lamiumamplexicaule</i> L.	Lamiaceae	Ghund Panre	-	-	+	-	Hb	W & D	The	Np	-
48	<i>Leucasnutans</i> (Roth) Spreng.	Lamiaceae	Sheen Guly	+	-	-	+	Hb	W	The	Np	-
49	<i>Menthaarvensis</i> L.	Lamiaceae	Venaly	-	+	+	-	Hb	W	Cha	Np	-
50	<i>Salvialebeia</i> R.Br.	Lamiaceae	Zangali Palak	-	-	+	+	Hb	W	Hem	Mep	-
51	<i>Punicagranatum</i> L.	Lytheraceae	Anaar	+	+	+	+	Tr	D	Mesp	Mp	-
52	<i>Abutilontheophrasti</i> Medik.	Malvaceae	Gule Khairo	-	-	-	+	Hb	D	Cha	Mep	-
53	<i>Malvastrumcoromandelianum</i> (L.) Garcke	Malvaceae	Gandha Boty	-	-	+	-	Hb	D	Nap	Mp	-
54	<i>Malva neglecta</i> Wallr.	Malvaceae	Panderak	-	+	+	+	Hb	W & D	Cha	Mp	-
55	<i>Acacia nilotica</i> (L.) Delile	Meliaceae	Kikar	+	+	+	+	Tr	D	Mip	Np	-
56	<i>Acacia modesta</i> Wall.	Mimosaceae	Palosa	+	+	+	+	Tr	D	Mip	Lep	+
57	<i>Melia azedarach</i> L.	Mimosaceae	Bakyana	+	+	+	+	Tr	D	Mip	Lep	+
58	<i>Ficus carica</i> L.	Moraceae	Inzar	+	+	+	+	Tr	D	Nap	Mp	-

59	<i>Morus macroura</i> Miq.	Moraceae	Sheh Speen toot	+	+	+	+	Tr	D	Mgp	Mep	-
60	<i>Morus alba</i> L.	Moraceae	Speen Speen toot	+	+	+	+	Tr	D	Mesp	Mep	-
61	<i>Eucalyptus camaldulensis</i> Dehnh.	Myrtaceae	Laachi	+	+	+	+	Tr	D	Mgp	Np	-
62	<i>Eugenia jambolana</i> Lam.	Myrtaceae	Gulab Gaman	+	+	+	+	Tr	D	Mesp	Mep	-
63	<i>Psidium guajava</i> L.	Myrtaceae	Amrood	+	+	+	+	Tr	D	Mesp	Mep	-
64	<i>Peganum harmala</i> L.	Nitrariaceae	Spelany	-	-	+	-	Hb	D	Nap	Lep	-
65	<i>Boerhavia diffusa</i> L.	Nyctaginaceae	Insut	-	+	-	-	Hb	D	Hem	Mp	-
66	<i>Mirabilis jalapa</i> L.	Nyctaginaceae	Gulabasi	+	-	+	+	Hb	D	Nap	Mep	-
67	<i>Gauracoccinea</i> Nutt. ex Pursh	Onagraceae	Phali Boty	-	+	+	-	Hb	D	The	Mp	-
68	<i>Jasminumsambac</i> (L.) Aiton	Oleaceae	Jasmine	+	+	+	+	Hb	D	Cha	Mp	-
69	<i>Dalbergia sissoo</i> DC.	Papilionaceae	Shawa	+	+	+	+	Tr	D	The	Np	-
70	<i>Acrachneracemosa</i> (B.Heyne ex Roth) Ohwi	Poaceae	Shamokha	-	-	-	+	Hb	D	The	Mp	-
71	<i>Avena sativa</i> L.	Poaceae	Jamdar	-	-	+	-	Hb	D	The	Mp	-
72	<i>Cymbopogon citratus</i> (DC.) Stapf	Poaceae	Shna Chay	+	+	+	+	Hb	D	Cha	Mp	-
73	<i>Cynodon dactylon</i> (L.) Pers.	Poaceae	Kabal	+	+	+	+	Hb	W & D	Hem	Np	-
74	<i>Hordeum murinum</i> L.	Poaceae	Warbashe	-	-	-	+	Hb	D	Cha	Mp	-
75	<i>Rostrariacristata</i> (L.) Tzvelev	Poaceae	Pesho Laky	-	-	+	-	Hb	D	The	Mp	-
76	<i>Triticum aestivum</i> L.	Poaceae	Ghanam	-	+	+	-	Hb	D	The	Mp	-
77	<i>Zea mays</i> L.	Poaceae	Jowar	-	-	-	+	Sb	D	The	Mep	-
78	<i>Persicaria glabra</i> (Willd.) M.Gómez	Polygonaceae	Sor Pulpulak	-	-	+	+	Hb	W	Nap	Mp	-
79	<i>Persicariahydropiper</i> (L.) Delarbre	Polygonaceae	Spin Pulpulak	-	-	+	+	Hb	W	Nap	Np	-
80	<i>Polygonum plebeium</i> R.Br.	Polygonaceae	Sormaky	-	-	+	+	Hb	D	Hem	Lep	-
81	<i>Rumexobtusifolius</i> L.	Polygonaceae	Shalkhy	-	-	+	-	Hb	W	Geo	Mep	-
82	<i>Bacopamonniieri</i> (L.) Wettst.	Plantaginaceae	Insutpanre	-	-	-	+	Hb	W	Hem	Np	-
83	<i>Veronicaanagallis-aquatica</i> L.	Plantaginaceae	Sheen Boty	-	-	-	+	Hb	W	The	Mp	-
84	<i>Anagallis arvensis</i> L.	Primulaceae	Nila	-	-	+	-	Hb	D	The	Np	-
85	<i>Nigella sativa</i> L.	Ranunculaceae	Kalonji	-	-	+	+	Hb	D	The	Lep	-
86	<i>Ranunculusrepens</i> L.	Ranunculaceae	Jaghagha	-	-	+	+	Hb	D	Geo	Mp	-
87	<i>Ziziphus jujuba</i> Mill.	Rhamnaceae	Marhany	+	-	+	+	Tr	D	Mesp	Mp	+
88	<i>Galiumaparine</i> L.	Rubiaceae	Kutri Boty	-	-	-	+	Hb	W	The	Np	+
89	<i>Citrus indica</i> L.	Rutaceae	Narang	+	+	+	+	Sb	D	Mip	Mp	+
90	<i>Citruslimetta</i> Risso	Rutaceae	Metha	+	+	+	+	Sb	D	Mip	Mp	+
91	<i>Citrus sinensis</i> (L.) osbeck	Rutaceae	Malta	+	+	+	+	Sb	D	Mip	Mp	+
92	<i>Ailanthus altissima</i> (Mill.) Swingle	Simaroubaceae	Paramy Shandy	+	+	+	+	Tr	D	Mip	Mp	-
93	<i>Cestrumnocturnum</i> L.	Solanaceae	Raatki Raani	+	+	+	+	Hb	D	Cha	Mp	-
94	<i>Datura stramonium</i> L.	Solanaceae	Batura	-	+	+	-	Hb	D	Cha	Mep	+
95	<i>Datura innoxia</i> Mill.	Solanaceae	Ghatpanre	-	-	+	-	Hb	D	Cha	Mp	-
96	<i>Lycopersicon esculentum</i> Mill.	Solanaceae	Tamatar	-	-	+	+	Hb	W & D	The	Mp	-
97	<i>Solanum nigrum</i> L.	Solanaceae	Kachmacho	-	-	+	+	Hb	D	Hem	Np	-
98	<i>Solanum surattense</i> Burm. f.	Solanaceae	Maraghone	+	-	+	+	Hb	D	Cha	Mp	+
99	<i>Physaliminima</i> L.	Solanaceae	Gandha Boty	-	-	+	+	Hb	D	Hem	Mp	-
100	<i>Thymelaeapasserina</i> (L.) Coss. & Germ.	Thymelaeaceae	Not Known	-	-	-	+	Hb	D	Hem	Np	-
101	<i>Lantana camara</i> L.	Verbenaceae	Punj Guly	+	+	+	+	Sb	D	Nap	Mp	+
102	<i>Vitisvinifera</i> L.	Vitaceae	Angor	-	-	+	+	Sb	D	Mip	Mep	-
103	<i>Curcuma longa</i> L.	Zingiberaceae	Kurkaman	+	+	+	+	Hb	W & D	Geo	Mep	-
104	<i>Tribulus terrestris</i> L.	Zygophyllaceae	Markondy	+	-	-	+	Hb	D	Hem	Lep	+

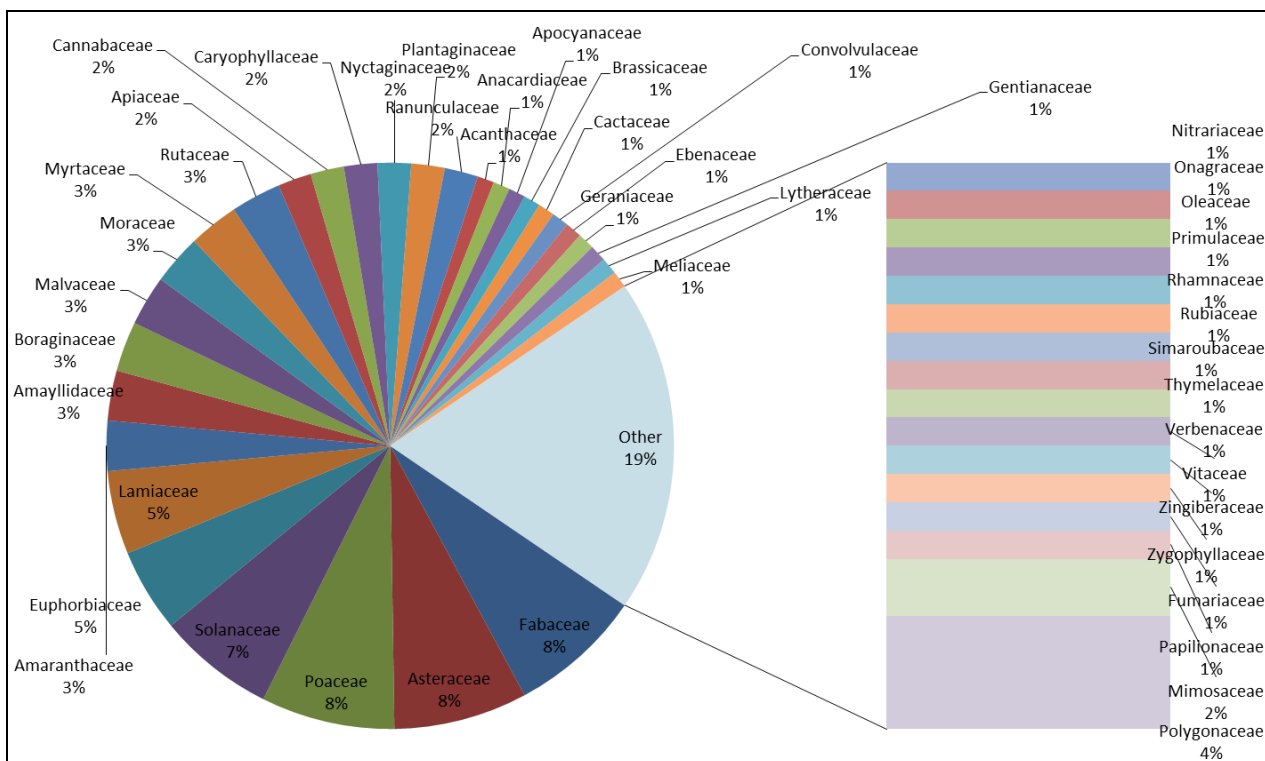


Fig 1: Families distribution

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