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Floristic composition, utility and diversity of plants of ghoriwala, District Bannu, KP, Pakistan

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Abstract
The current work comprised of 115 species belonging to 43 families in which only 1 family were Pteridophytic 42 families were Angiospermic (6 Monocots, 36 Dicots). On the basis of highest number of species family Poaceae was the dominant comprised on 11 species (9.565%) followed by Solanaceae 9 species (7.826%) and Fabaceae 8 species (6.956%). Plant habit class (Table 2-A, Fig 1) suggested that 71 species (61.73%) were Herbs followed by Tree 27 species (23.47%), 9 species (7.826%) were Shrub and 8 species (6.956%) were Climbers. Life form class (Table 2-B, Fig 2) showed that therophytes were the dominant class had 66 species (57.39%), followed by megaphanerophytes 19 species (16.52%). Leaf size class (Table 2-C, Fig 3) observed that Nanophyll were the dominant class had 43 species (37.39%), followed by microphyll 41 species (35.65%). Ethnobotanical study revealed that 21 species were used as Fruit, 19 species were Vegetable, 12 species were Ornamental, 18 species were Fodder, 13 species were Fuel, 30 species were Medicinal, 7 species were Timber, 10 species were Thatching, 37 species were Food, and 9 species were spices/condiment (Table 3, Fig 4).
This is the first work which has been done for the first time in village Ghoriwala District Bannu, through this work, specific data were observed and can be used as a reference for future studies.

Keywords: diversity, utility, life form, leaf size, Ghoriwala, Bannu

Introduction
A flora is comprised of plant taxa in particular geographic area with certain geological period or may exists in different ecosystem. Floristic structure reveals the variety of natural resources which is affected by different biotic and abiotic factors viz. over-grazing, over-browsing, deforestation, soil texture, soil corrosion and vulnerability of folks of the area. The information with regards to species configuration of an area is said to be a perquisite for any Phyto-geographical, ecological, and managing events (Ali, 2008) [4]. Floristic surveys are helpful to identifying plant wealth and status for their exploitation on a systematic approaches and scientific basis (Qureshi *et al*., 2011) [25]. Ethnobotanical studies focused on contributing to plant biodiversity knowledge (taking into account that the biological diversity as well as human awareness about the uses, applications, and natural resource conservation) on one hand and take this knowledge for further social and scientific interventions on the other hand ethnobotanical research also helps in establishment of priorities of local community to ensure that the local values are translated into rational use of resources and effective conservation of biological diversity and cultural knowledge by Khan *et al*., 2015 [12]. A large numbers of livestock's outcome in over-grazing and over-browsing of natural vegetation and they get fodder, fuel, tubers and other edible parts from forest besides cultivating some seasonal agricultural crops like maize and wheat in small areas (Mehmood *et al*., 2017) [19]. Approximately ¼ species have medicinal value. This is an expression of the magnitude of share of natural flora in relations of number of species used in the additional medicines (Khan *et al*., 2017) [17]. Floral diversity mainly depends upon the climatic conditions habitat conditions and altitudinal gradient (Saima *et al*., 2009) [28]. Different researchers have explored the information about floristic diversity, Utility and ecological attributes of different regions of the world as well as from Pakistan (Cain & Castro, 1959.; Shah *et al.*, 1991; Segawa & Nkuutu, 2006.; Alsherif *et al.*, 2013.; Ozgur and Ansin, 2003; Perveen *et al.*, 2008; Durrani *et al.*, 2010; Khan *et al.*, 2011; Amjad *et al.*, 2012; Badshah *et al.*, 2013; Khan *et al.*, 2014; Mehmood *et al.*, 2015; Ali *et al.*, 2016) [10, 29, 5, 22, 23, 11, 26, 8, 18].

The main aim of this study is to assess the floristic composition, medicinal value of flora of Ghoriwala, District Bannu, KP, Pakistan with special reference to the following objectives

- To prepare a comprehensive checklist of flora
- Collection, identification, documentation of medicninal plants from the area.

Material and Methods
Study Area
Bannu district lies in the Bannu valley, which is a low structural basin. The valley bounded on the north by the hills of Kohat district and on the west by the hills of Karaghora, which is an extension of North Waziristan hills. The highest point in northern hills is Baraganatu post with a height of 434 meters. While in the western hills, the height goes up to 708 meters. The rivers flowing through these hills have formed a number of passes. The important passes are Kurram and Tochi. They are named after the Kurram and Tochi rivers. The district consists of a great alluvial plain. The alluvium has been brought by the streams from

North Waziristan. The general elevation of the plain is from 300 to 600 meters. The foot hills area is formed of stiff clay, covered by layers of stones and pebbles (Anonymus, 1998).

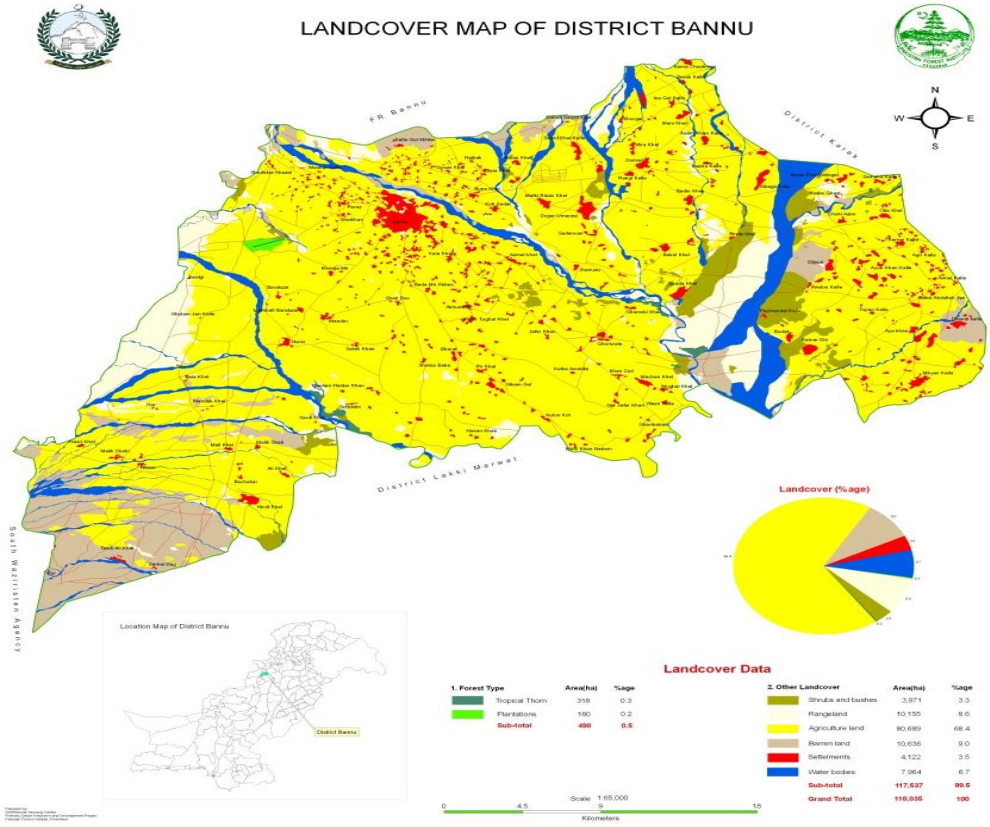

Fig : Map of study area

Plant collection and identification

The research site was frequently visited for collection of data pertaining plants diversity, and ethnobotany during March 2017 to May 2018. The plant specimens were identified with help of Flora of Pakistan and other literature (Stewart, 1967; Nasir and Ali, 1971-1991; Ali and Qaisar, 1991-2004) [24, 21, 3]. For Biological spectrum classification plants were classified into various Life-form classes by (Raunkiaer, 1934; Hussain, 1989) [26]. A semi structured questionnaire was designed to collect the indigenous knowledge regarding the plant utilization. The ethnobotanical information of the flora of Ghoriwala District Bannu was obtained by questionnaires and interviewing the local aged people including men and women. Field diary was used to record the data during interviews of the plant collectors, local people and hakims. The interviews and group discussions were held with villagers that provide valuable information including all sorts of plant use. All the collected plant specimens were given local name and their relevant data pertaining to locality, habitat, habit, family, scientific name, part used and other valuable information were observed. Collected specimens were submitted to Herbarium, Department of Botany, BKUC for future referee. The ethnobotanical information were recorded regarding plant usage as medicinal, fuel, timbers, fodder, fruits, vegetables, ornamental and spices.

Results and Discussion

The present study revealed that a total of 115 species belonging to 43 families in which 1 family were Pteridophyte 42 families were Angiosperms (6 monocot, 36 dicot). On the basis of highest number of species family Poaceae was the dominant contain 11 species (9.565%) followed by Solanaceae 9 species (7.826%) followed by Fabaceae 8 species (6.956%), Cucurbitaceae 7 species (6.086%), Apiaceae 6 species (5.217%), Asteraceae, Malvaceae, Myrataceae had 5 species (4.347%) each while Lamiaceae, Moraceae, Rosaceae had 4 species (3.478%) Amaranthaceae, Brassicaceae, Euphorbiaceae, Rutaceae had 3 species (2.608%), Alliaceae, Chenopodaceae, Plantaginaceae, Polygonaceae, Rhamnaceae, Siliaceae had 2 species (1.739%), while the remaining 22 families had only 1 species (0.869%), Equisetaceae, Arecaceae, Aloaceae, Mosaceae, Zingiberaceae, Anarcadaceae, Asclepiadaceae, Borgaginaceae, Cactaceae, Cannabaceae, Combretaceae, Convolvulaceae, Meliaceae, Nitraceae, Oxalidaceae, Papaveraceae, Portulaceae, Punicaceae, Salvadoraceae, Typhaceae, Vitaceae, Zygophyllaceae (Table 1). Plant habit class show that 71 species (61.73%), were Herbs followed by Tree 27 species (23.47%), 9 species (7.826%), were Shrub and 8 species (6.956%), were Climbers (Table 2-A, Fig 1). Life form class (Table 2-B, Fig 2) show that therophytes were the dominant class had 66 species (57.39%), followed by Mega phanerophytes 19 species (16.52%), followed by Nanophanerophytes 8 species (6.956%), followed by geophytes and chameophytes had 6 species (5.217%), followed by hemicrptophytes 5 species (4.347%), followed by microphanerophytes 3 species (2.608%), followed by macrophenrophytes 2 species (1.739%). Leaf size class (Table 2-C, Fig 3) observed that Nanophyll were the dominant class had 43 species

(37.39%), followed by microphyll 41 species (35.65%), followed by mesophyll 18 species (15.65%), followed by macrophyll 6 species (5.217%), followed by leptophyll 5 species (4.347%), followed by aphyllous 2 species (1.739%). Ethnobotanical study (Table 3, Fig 4) show that 21 species used as Fruit, 19 species were Vegetable, 12 species were Ornamental, 18 species were Fodder, 13 species were Fuel, 30 species were Medicinal, 7 species were Timber, 10 species were Thatching, 37 species were Food, and 9 species were Condiment. This is the first work which have been done for the first time in Village Ghoriwala District Bannu. Poaceae was the dominant families in our study. The present findings agree with many other workers (Akhtar and Hussain, 2007; Jakhar *et al*., 2005; Mohammad *et al*., 2005; Qureshi and Bhatti, 2011a; Shah and Khan, 2006; Shah and Hussain, 2008; Waheed and Tareen, 2009) [1, 15, 20, 25] who reported that Poaceae, Asteraceae and Papilionceae were leading weed families in their studies. In our study therophytes were the dominant life form class having higher number of species because Therophytes dominate in disturbed and cultivated habitats. The findings agree with that of (Waheed and Tareen, 2009) [35] who also observed dominance of therophytic species in cultivated fields including wheat, maize, tobacco and rice. Nanophylls also dominant in current study. Our findings in this aspect agree with that of (Hussain and Saljoqi, 1993) [14] who also concluded that most species have small leaves. A plant passes through different phenological stages during its life cycle with changing environmental condition especially thermoperiod and photoperiod. Phenological studies help in predicting time of germination, vegetative growth, flowering, time of harvesting fruits/seeds or crops. (Badshah *et al*., 2013) [8] conducted the same floristic study and reported a total of 205 taxon distributed with 56 families in which 140 taxon were wild with regards to mesophytes and xerophytes, from District Tank, North Waziristan Agency, Pakistan. (Shaheen *et al.*, 2014) [33] explored 186 species with 63 families and 148 genera. Important families were Poaceae and Asteraceae (24 & 20 species). Therophytes were dominant with a share of 45.99 % and Phanerophytes with a share of 29.95 % with regards to life form. (Razaq *et al*., 2010) [27] identified 32 families with 50 plant species from Changa valley district Shangla, Pakistan. *Morchella esculenta* (L.) Pers ex Fr is highly valued marketable and medicinal plants in area and used for curing of different diseases while 2 Pteridophytic important species *Adiantum venustum* D. Don and *Adiantum capillus-veneris* L. were also identified with regards to different ailments. As majority of local peoples depend upon these plant resources for curing of different diseases through indigenous medicine system. In the current study we are depicting ethnobotanical plants in relation with indigenous knowledge can be used for conservation, exploration and for sustainability in current area and for validation of these plants preparation for ethnobotanical practices. Therefore measures for conservation of these plant resources are urgently needed. The common treated ailments in the study area were stomach, intestinal, chest and diabetes. It was confirmed that deforestation and overgrazing are the main causes for loss of plant wealth. Urgent measures such as *NAGHA SYSTEM* (Control of grazing and deforestation by local community for a specific time) is required to conserve the plants in the study area (Hassan *et al*., 2015) [12].

Table 1: Floristic diversity, Biological spectrum of plants of Ghoriwala District Bannu, Khyber Pakhtunkhwa, Pakistan

S. No	Division/Family/Species	Habit	Life form	Leaf size
A.	Pteridophyte			
1.	Equisetaceae			
1.	*Equisetium humile* L.	Herb	G	Ap
B.	Monocotyledons			
1.	Arecaceae			
2.	*Phoenix dactylifera* L.	Tree	MP	Mes
2.	Alliaceae			
3.	*Allium cepa* L.	Herb	G	Mes
4.	*Allium sativum* L.	Herb	G	Mes
3.	Aloaceae			
5.	*Aloe vera* (L.) Brum	Herb	Th	Mic
4.	Moraceae			
6.	*Musa paradisiaca* L.	Herb	Ch	Mac
5.	Poaceae			
7.	*Apluda mutica* L.	Herb	H	N
8.	*Brachiaria reptans* (Linn.) Gardner & Hubbard.	Herb	Th	Mic
9.	*Cynodon dactylon* (L.) Pers.	Herb	H	Mic
10.	*Dactyloctenium aegyptium* (L.) Wild.	Herb	Th	N
11.	*Hordeum vulgare* L.	Herb	Th	Mic
12.	*Leptochloa panacea* (Retz.)	Herb	Th	N
13.	*Oryza Sativa* L.	Herb	Th	Mic
14.	*Paspalum paspalodes* (Michx.)scribner	Herb	H	Mic
15.	*Saccharum Officinale* L.	Herb	Ch	Mic
16.	*Triticum aestivum* L.	Herb	Th	Mic
17.	*Zea mays* L.	Herb	Th	Mes
6.	Zingiberaceae			
18.	*Curcuma longa* L.	Herb	G	Mic
C.	DICOTYLEDONS			
1.	Amaranthaceae			
19.	*Achyranthes bidentata* Blume	Herb	Th	N

20.	*Achyranthes japonica* (Miq.)	Herb	Th	N
21.	*Amaranthus tricolor* L.	Herb	Th	N
2.	Anacardiaceae			
22.	*Mangifera indica* L.	Tree	Mp	Mic
3.	Apiaceae			
23.	*Apium graveolens* L.	Herb	Th	N
24.	*Coriandrum sativum* L.	Herb	Th	N
25.	*Daucus carota* L.	Herb	Th	L
26.	*Foeniculum vulgare* Miller	Herb	Th	Mic
27.	*Trachyspermum ammi* (L.)	Herb	Th	Mic
28.	*Torilis japonica* (Houtt) DC.	Herb	Th	N
4.	Asclepiadaceae			
29.	*Calotropis procera* L.	Shrub	Ch	Mic
5.	Asteraceae			
30.	*Carthamus oxycantha* M.B	Herb	Th	Mic
31.	*Cichorium intybus* L.	Herb	Th	N
32.	*Conyza Canadensis L.*	Herb	Th	Mic
33.	*Sonchus oleraceus* L.	Herb	Th	Mic
34.	*Taraxacum officinale* Webb	Herb	Th	Mic
35.	*Xanthium strumarium* L.	Herb	Th	Mes
6.	Boraginaceae			
36.	*Cordia obliqua* Willd.	Tree	MP	Mic
7.	Brassicaceae			
37.	*Brassica campestris* L.	Herb	Th	Mic
38.	*Raphanus sativus* L.	Herb	Th	N
39.	*Lepidium sativum* L.	Herb	Th	Mic
8.	Cactaceae			
40.	*Opuntia ficus indica* (L) Mill	Shrub	MP	AP
9.	Cannabaceae			
41.	*Cannabis sativa* L.	Herb	Th	Mic
10.	Chenopodaceae			
42.	*Chenopodium album* L.	Herb	Th	Mes
43.	*Chenopodium ambrosioides* L.	Herb	Th	Mes
11.	Combretaceae			
44.	*Terminalia arjuna* (Roxb. ex DC.) Wight & Arm	Tree	MegP	Lep
12.	Convolvulaceae			
45.	*Convolvulus arvensis* L.	Herb	Th	N
13.	Cucurbitaceae			
46.	*Citrullus colocynthis* (L.) Shred.	Climber	Th	Mic
47.	*Citrullus vulgaris* (schrad)	Climber	Th	Mic
48.	*Cucurbita maxima* D.Lam	Climber	Th	Mac
49.	*Cucumis melo* L.	Climber	Th	Mac
50.	*Cucrbita pepo* L.	Climber	Th	Mes
51.	*Cucumis sativus* L.	Climber	Th	Mac
52.	*Luffa Cylindrica* (Linn.) Roem.	Climber	Th	Mac
14.	Euphorbiaceae			
53.	*Euphorbia helioscopia* (Roxb)	Herb	Th	N
54.	*Euphorbia hirta* L.	Herb	Th	N
55.	*Ricinus commuis* L.	Herb	Ch	Mes
15.	Fabaceae			
56.	*Acacia nilotica* (L.) Wild.ex Delile	Tree	MP	L
57.	*Arachis hypogaea* L.	Herb	Th	L
58.	*Cassia fistula* L.	Tree	Mp	N
59.	*Cicer arietinum* L.	Herb	Th	L
60.	*Dalbergia sissoo* Roxb	Tree	MP	N
61.	*Medicago sativa* L.	Herb	Th	N
62.	*Pisum sativum* L.	Herb	Th	N
63.	*Vigna marina (Burn)* Merr.	Herb	Th	N
16.	Lamiaceae			
64.	*Vitex trifolia L.*	Shrub	NP7	N
65.	*Mentha spicata* L.	Herb	G	N
66.	*Mentha longifolia* L.	Herb	G	N
67.	*Cimum sanctum* L.	Herb	Th	Mic
17.	Malvaceae			
68.	*Abelmoschus esculentus L.*	Herb	Th	Mic
69.	*Hibiscus cannabinus* L.	Herb	NP	Mic
70.	*Hibiscus esculantus* L.	Herb	NP	Mic
71.	*Hibiscus rosa sinensis* L.	Shrub	Th	Mic

72.	*Sida candifolia* L.	Shrub	Th	Mic
18.	Meliaceae			
73.	*Melia azedarach* L.	Tree	Mp	N
19.	Moraceae			
74.	*Ficus bengalensis* L.	Tree	MegP	Mes
75.	*Ficus carica* L.	Tree	Megp	Mes
76.	*Morus alba* L.	Tree	Megp	Mes
77.	*Morus nigra* L.	Tree	Megp	Mes
20.	Myrataceae			
78.	*Eucalyptus camaldulensis* Dehnh	Tree	MP	N
79.	*Eucalyptus globules* Labill.	Tree	MP	N
80.	*Eugenia jamolana* Lam.	Tree	MP	N
81.	*Myrtus communis* L.	Tree	NP	N
82.	*Psidium guajava* L.	Tree	Th	Mes
21.	Nitrariaceae			
83.	*Pagnum harmala* L.	Herb	Th	N
22.	Oxalidaceae			
84.	*Oxalis corniculata* L.	Herb	Th	N
23.	Papaveraceae			
85.	*Papaver somniferum* L.	Herb	Th	Mac
24.	Plantaginaceae			
86.	*Plantago major* L.	Herb	Th	Mic
87.	*Plantago ovata* (Forssk)	Herb	Th	Mic
25.	Polygonaceae			
88.	*Bistorta manshuriensis* Kom.	Herb	Th	N
89.	*Polygonum dichrotomum* Blume.	Herb	Th	N
26.	Portulaceae			
90.	*Portulaca oleracea* L.	Herb	Th	N
27.	Punicaceae			
91.	*Punica granutum* L.	Tree	Micp	Mic
28.	Rhamnaceae			
92.	*Ziziphus mauratiana* Lam.	Tree	MicP	N
93.	*Ziziphus spinosa* Hu	Tree	MicP	N
29.	Rosaceae			
94.	*Eriobotrys japonica* Lindley.	Tree	MacP	N
95.	*Pyrus malis* L.	Tree	MacP	N
96.	*Rosa alba* L.	Shrub	Np	N
97.	*Rosa indica* L.	Shrub	Np	N
30.	Rutaceae			
98.	*Citrus lemon* L.	Shrub	Th	N
99.	*Citus medica* L.	Tree	MegP	Mes
100.	*Citrus reticulata* Blanco.	Tree	Th	N
31.	Salvadoraceae			
101.	*Salvadora oleoides* Decne.	Tree	Np	N
32.	Siliacaceae			
102.	*Salix acmophylla* Boiss.	Tree	Mp	Mes
103.	*Salix babylonica* L.	Tree	Mp	Mic
33.	Solanaceae			
104.	*Capsicum annuum* L.	Herb	Th	Mic
105.	*Datura metel* L.	Herb	Th	Mic
106.	*Datura stramonium* L.	Herb	Th	Mes
107.	*Lycopersicon esculentum* Miller.	Herb	Th	Mic
108.	*Physalis angulata* L.	Herb	Th	Mic
109.	*Solanum melongena* L.	Herb	Th	Mic
110.	*Solanum nigram* L.	Herb	Th	Mic
111.	*Solanum surattense* Burm.	Herb	H	N
112.	*Withania sommifera* L.	Herb	Ch	Mic
34.	Typhaceae			
113.	*Typha orientalis* Presl.	Herb	Ch	Mic
35.	Vitaceae			
114.	*Vitis vinifera* L.	Shrub	Np	Mes
36.	Zygophyllaceae			
115.	*Tribulus Terrestris* L.	Herb	H	L

Keys

Life form classes: Th- Therophytes, G-Geophytes, MP- Megaphanerophytes, Ch-Chaemophytes, Np-Nanophanerophytes, Micp-Micro phanerophytes, Macp-Macrophanerophytes, H-Hemicryptophytes

Leaf size classes: Ap-Aphallous, Mes-Mesophyll, Mic-microphyll, Mac-Macrophyll, N-Nanophyll, L-Leptophyll**.**

Table 2: Summary of ecological characteristics of plants of Ghoriwala, District Bannu, Pakistan

S. no	Parameters	No of species	%age
A. Habit class			
1.	Herb	71	61.73%
2.	Tree	27	23.47%
3.	Shrub	9	7.826%
4.	Climbers	8	6.956%
Total		115	99.99%
B. Lifeform Class			
1.	Therophyte	66	57.39%
2.	Mega phanerophyte	19	16.52%
3.	Nanophanerophyte	8	6.956%
4.	Geophyte	6	5.217%
5.	Chaemophytes	6	5.217%
6.	Hemicryptophyte	5	4.347%
7.	Micro phanerophyte	3	2.608%
8.	Macro phanerophyte	2	1.739%
Total		115	99.99%
C. Leaf size class			
1.	Nanophyll	43	37.39%
2.	Microphyll	41	35.65%
3.	Mesophyll	18	15.65%
4.	Macrophyll	6	5.217%
5.	Leptophyll	5	4.347%
6.	Aphyllus	2	1.739%
Total		115	99.995

Table 3: Economic importance classes of plant resources of Ghoriwala District Bannu Pakistan.

S. #	Division/ Family/ Species	Ethnobotanical uses									
A.	Pteridophytes	Fruits*	Vegetables	Ornamental	Fodder**	Fuel wood***	Medicinal	Timber	Thatching	Food	Condiments Condiments
1.	Equisetaceae										
1.	*Equisetium humile* L.	-	-	-	-	-	-	-	-	-	-
B.	MONOCOTYLEDONS										
1.	Arecaceae										
2.	*Phoenix dactylifera L.*	+	-	-	-	-	-	-	+	+	-
2.	Alliaceae										
3.	*Allium cepa* L.	-	+	-	-	-	+	-	-	+	-
4.	*Allium sativum* L.	-	+	-	-	-	+	-	-	+	-
3.	Aloaceae										
5.	*Aloe vera* (L.) Brum	-	-	+	-	-	+	-	-	-	-
4.	Moraceae										
6.	*Musa paradisiaca* L.	+	-	-	-	-	-	-	-	+	-
5.	Poaceae										
7.	*Apluda mutica* L.	-	-	+	+	-	-	-	-	-	-
8.	*Brachiaria reptans* (Linn.) Gardner & Hubbard.	-	-	-	+	-	-	-	-	-	-
9.	*Cynodon dactylon* (L.) Pers.	-	-	+	+	-	-	-	-	-	-
10.	*Dactyloctenium aegyptium* (L.) Willd.	-	-	-	+	-	-	-	-	-	-
11.	*Hordeum vulgare* L.	-	-	-	+	-	-	-	-	-	-
12.	*Leptochloa panacea* (Retz.)	-	-	-	+	-	-	-	-	-	-
13.	*Oryza sativa* L.	-	-	-	+	-	-	-	-	+	-
14.	*Paspalum paspalodes* (Michx.) scribner	-	-	-	+	-	-	-	-	-	-
15.	*Saacharum officinale* L.	-	-	+	+	-	-	-	+	-	-
16.	*Triticum aestivum* L.	-	-	+	+	-	-	-	-	+	-
17.	*Zea mays* L.	-	-	-	+	-	-	-	-	+	-
6.	Zingiberaceae										
18.	*Curcuma longa* L.	-	-	-	-	-	-	-	-	-	+
C.	DICOTYLEDONS										
1.	Amaranthaceae										
19.	*Achyranthes bidentata* Blume	-	-	-	-	+	-	-	-	-	-
20.	*Achyranthes japonica* (Miq.)	-	-	-	-	+	-	-	-	-	-
21.	*Amaranthus tricolor* L.	-	-	-	+	-	-	-	-	-	-

2.	Anacardiaceae										
22.	*Mangifera indica* L.	+	-	-	+	-	-	-	-	+	-
3.	Apiaceae										
23.	*Apium graveolens* L.	-	-	-	-	-	-	-	-	-	-
24.	*Caraiandrum sativum* L.	-	-	-	-	-	+	-	-	-	+
25.	*Dancus carota* L.	-	+	-	-	-	-	-	-	+	-
26.	*Foeniculum vulgare* Miller	-	-	-	-	-	+	-	-	-	+
27.	*Trachyspermum ammi* (L.)	-	-	-	-	-	+	-	-	-	-
28.	*Torilis japonica (Houtt) DC.*	-	-	-	+	+	-	-	-	-	-
4.	Asclepiadaceae										
29.	*Calotropis procera* L.	-	-	-	-	-	+	-	-	-	-
5.	Asteraceae										
30.	*Carthamus oxycantha* M.B	-	-	-	-	-	+	-	-	-	-
31.	*Cichorium intybus* L.	-	-	-	-	-	+	-	-	-	-
32.	*Conyza Canadensis* L.	-	-	-	-	-	-	-	-	-	-
33.	*Sonchus oleraceus* L.	-	-	-	-	-	+	-	-	-	-
34.	*Taraxacum officinale* Webb	-	-	-	+	-	+	-	-	-	-
35.	*Xanthium strumarium* L.	-	-	-	-	+	-	-	-	-	-
6	Boraginaceae										
36.	*Cordia obliqua* Willd.	-	-	-	-	+	-	-	-	-	-
7.	Brassicaceae										
37.	*Brassica campestris* L.	-	+	-	+	-	+	-	-	+	+
38.	*Raphanus sativus* L.	-	+	-	+	-	+	-	-	+	+
39.	*Lepidium sativum* L.	-	-	-	-	-	-	-	-	-	-
8.	Cactaceae										
40.	*Opuntia ficus indica* (L) Mill	-	-	-	-	-	-	-	-	-	-
9.	Cannabaceae										
41.	*Cannabis sativa* L.	-	-	-	-	-	-	-	+	-	-
10.	Chenopodiaceae										
42.	*Chenopodium album* L.	-	+	-	-	-	-	-	-	+	-
43.	*Chenopodium ambrosioides* L.	-	-	+	-	-	-	-	-	-	-
11.	Combretaceae										
44.	*Terminalia arjuna* (Roxb. ex DC.) Wight & Arm	-	-	-	-	-	-	+	-	-	-
12.	Convolvulaceae										
45.	*Convolvulus arvensis* L.	-	-	-	+	-	-	-	-	-	-
13.	Cucurbitaceae										
46.	*Citrullus colocynthis* (L.) Shred.	+	-	-	-	-	+	-	-	-	-
47.	*Citrullus vulgaris* (schrad)	+	+	-	-	-	-	-	-	+	-
48.	*Cucurbita maxima* D.Lam	-	+	-	-	-	-	-	-	-	-
49.	*Cucumis melo* L.	+	-	-	-	-	-	-	-	+	-
50.	*Cucrbita pepo* L.	-	+	-	-	-	-	-	-	+	-
51.	*Cucumis sativus* L.	-	+	-	-	-	-	-	-	+	-
52.	*Luffa Cylindrica* (Linn.) Roem.	-	+	-	-	-	-	-	-	+	-
14.	Euphorbiaceae										
53.	*Euphorbia helioscopia* (Roxb)	-	-	-	-	-	+	-	-	-	-
54.	*Euphorbia hirta* L.	-	-	-	-	-	-	-	-	-	-
55.	*Ricinus commuis* L.	-	-	-	-	-	+	-	-	-	-
15.	Fabaceae										
56.	*Acacia nilotica* (L.) Wild.ex Delile	-	-	-	-	-	-	-	+	-	-
57.	*Arachis hypogaea* L.	+	-	-	-	-	-	-	-	+	-
58.	*Cassia fistula* L.	-	-	-	-	-	-	-	+	-	-
59.	*Cicer arietinum* L.	+	-	-	-	-	-	-	-	+	-
60.	*Dalbergia sissoo* Roxb	-	-	-	-	-	-	+	-	-	-
61.	*Medicago sativa* L.	-	+	-	-	-	-	-	-	-	-
62.	*Pisum sativum* L.	-	+	-	-	-	-	-	-	+	-
63.	*Vigna marina* (Burn) Merr.	-	-	-	-	-	-	-	-	-	-
16.	Lamiaceae										
64.	*Vitex trifolia* L.	-	-	-	-	-	-	-	-	-	-
65.	*Mentha spicata* L.	-	-	-	-	-	-	-	-	-	+
66.	*Mentha longifolia* L.	-	-	-	-	-	+	-	-	-	+
67.	*Cimum sanctum* L.	-	-	-	-	-	-	-	-	-	-
17.	Malvaceae										
68.	*Abelmoschus esculentus* L.	-	+	-	-	-	-	-	-	+	-
69.	*Hibiscus cannabinus* L.	-	+	-	-	-	-	-	-	+	-
70.	*Hibiscus esculantus* L.	-	-	+	-	-	-	-	-	-	-
71.	*Hibiscus rosa sinensis* L.	-	-	+	-	-	-	-	-	-	-
72.	*Sida candifolia* L.	-	-	-	-	-	-	-	-	-	-

18.	Meliaceae										
73.	*Melia azedarach* L.	-	-	-	-	-	-	+	-	-	-
19.	Moraceae										
74.	*Ficus bengalensis* L.	-	-	+	-	+	-	-	-	-	-
75.	*Ficus carica* L.	+	-	-	-	+	-	-	-	+	-
76.	*Morus alba* L.	+	-	-	-	+	-	+	-	+	-
77.	*Morus nigra* L.	+	-	-	-	+	-	+	-	+	-
20.	Myrtaceae										
78.	*Eucalyptus camaldulensis* Dehnh	-	-	-	-	-	-	+	-	-	-
79.	*Eucalyptus globules* Labill.	-	-	-	-	-	-	-	-	-	-
80.	*Eugenia jamolana* Lam.	-	-	-	-	-	-	+	-	-	-
81.	*Myrtus communis* L.	-	-	-	-	-	+	-	-	-	-
82.	*Psidium guajara* L.	+	-	-	-	-	+	-	-	+	-
21.	Nitrariaceae										
83.	*Pagnum harmala* L.	-	-	-	-	-	+	-	-	-	-
22.	Oxalidaceae										
84.	*Oxalis corniculata* L.	-	-	-	-	-	-	-	-	+	-
23.	Papaveraceae										
85.	*Papaver somniferum* L.	-	-	-	-	-	+	-	-	-	-
24.	Plantaginaceae										
86.	*Plantago major* L.	-	-	-	+	-	-	-	-	-	-
87.	*Plantago ovata* (Forssk)	-	-	-	-	-	+	-	-	-	-
25.	Polygonaceae										
88.	*Bistorta manshuriensis* Kom.	-	-	-	-	-	-	-	-	-	-
89.	*Polygonum dichrotomum* Blume.	-	-	-	-	-	-	-	-	-	-
26.	Portulaceae										
90.	*Portulaca oleracea* L.	-	+	-	-	-	-	-	-	-	-
27.	Punicaceae										
91.	*Punica granutum* L.	+	-	+	-	-	-	-	-	+	-
28.	Rhamnaceae										
92.	*Ziziphus mauratiana* Lam.	+	-	-	-	-	-	-	-	+	-
93.	*Ziziphus spinosa* Hu	+	-	-	-	-	-	-	-	+	-
29.	Rosaceae										
94.	*Eriobotrys japonica* Lindley.	+	-	-	-	-	-	-	-	+	-
95.	*Pyrus malus* L.	+	-	-	-	-	-	-	-	+	-
96.	*Rosa alba* L.	-	-	+	-	-	-	-	-	-	-
97.	*Rosa indica* L.	-	-	+	-	-	-	-	-	-	-
30.	Rutaceae										
98.	*Citrus lemon* L.	+	-	-	-	-	+	-	-	+	-
99.	*Citus medica* L.	+	-	-	-	-	+	-	-	+	-
100.	*Citrus reticulata* Blanco.	+	-	-	-	-	-	-	-	+	-
31.	Salvadoraceae										
101.	*Salvadora oleoides* Decne.	-	-	-	-	+	-	-	-	-	-
32.	Salicaceae										
102.	*Salix acmophylla* Boiss	-	-	-	-	+	-	-	+	-	-
103.	*Salix babylonica* L.	-	-	-	-	+	-	-	+	-	-
33.	Solanaceae										
104.	*Capsicum annuum* L.	-	+	-	-	-	-	-	-	+	+
105.	*Datura metel* L.	-	-	-	-	-	+	-	-	-	-
106.	*Datura stramonium* L.	-	-	-	-	-	+	-	-	-	-
107.	*Lycopersicon esculentum* Miller.	-	+	-	-	-	-	-	-	+	-
108.	*Physalis angulata* L.	-	-	-	-	-	+	-	-	-	-
109.	*Solanum melongena* L.	-	+	-	-	-	-	-	-	+	-
110.	*Solanum nigram* L.	-	-	-	-	-	+	-	-	-	-
111.	*Solanum surattense* Burm.	-	-	-	-	-	+	-	-	-	-
112.	*Withania somnifera* L.	-	-	-	-	-	+	-	-	-	-
34.	Typhaceae										
113.	*Typha orientalis* Presl.	-	-	-	-	-	-	-	+	-	-
35.	Vitaceae										
114.	*Vitis vinifera* L.	+	-	-	-	-	+	-	-	+	-
36.	Zygophyllaceae										
115.	*Tribulus terrestris* L.	-	-	-	-	-	+	-	-	-	-
	Total	21	19	12	18	13	30	7	10	37	9

Keys: F* = Fruit species, V = Vegetable species, O = Ornamental species, F** = Fodder species, F*** = Fuel wood, M = Medicinal species, T = Timber species, Th = Thatching species, HB = Honey bee species, C = Condiment species - = Absence + =Present

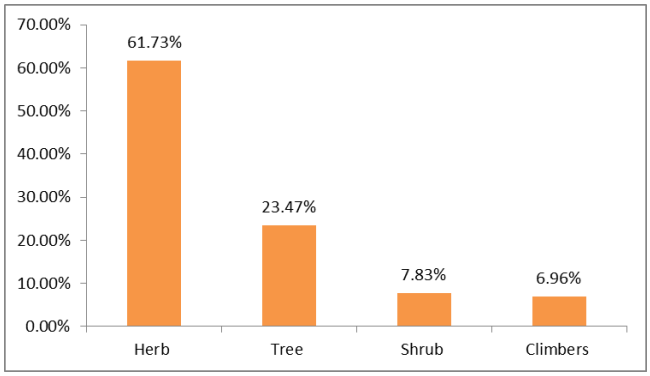

Fig 1: %age of habit class

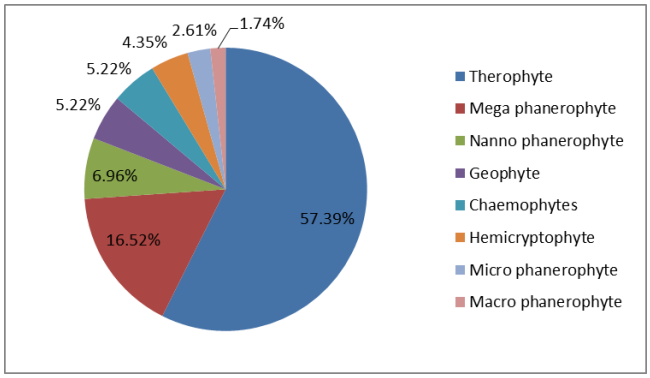

Fig 2: %age of Life form class

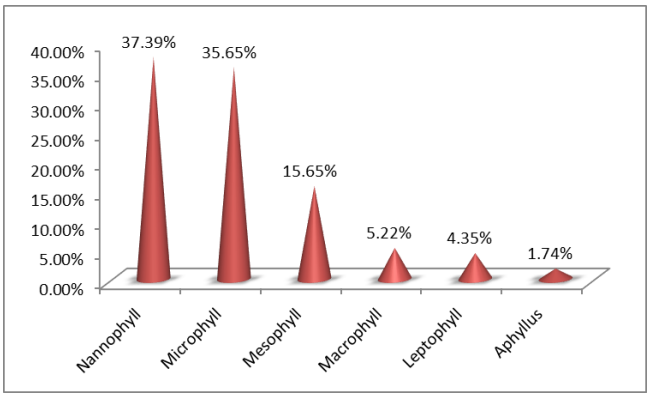

Fig 3: %age of Leaf size class

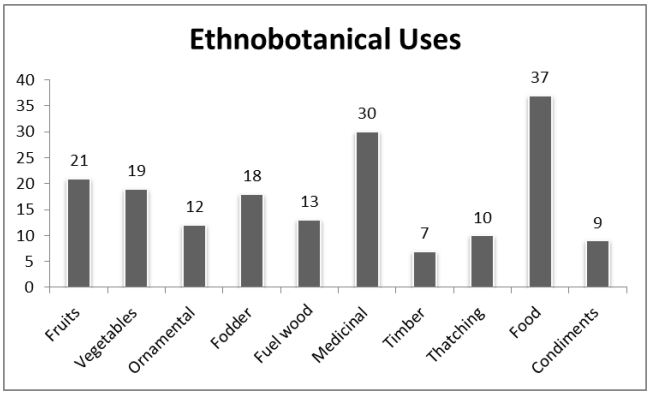

Fig 4: Ethnobotanical importance of Plants in area

KEY plantS PLATS

Fig 5: *Brassica campestris* L.

Fig 6: *Carthamus oxyacantha* M.Bieb.

Fig 7: *Cassia fistula* L.

Fig 8: *Chenopodium album* L.

Conclusion

The present study of floristic diversity revealed that 115 plant species which belonged to 43 families are worked out in Bannu. Ethonobotanical study revealed that 21 species were used as Fruit, 19 species were Vegetable, 12 species were Ornamental, 18 species were Fodder, 13 species were Fuel, 30 species were Medicinal, 7 species were Timber, 10 species were Thatching, 37 species were Food, and 9 species were spices. This is the first work which has been done for the first time in village Ghoriwala District Bannu, through this work, specific data were observed and can be used as a reference for future studies. It was concluded that over utilization, over collection, over exploitation, habitat degradation, overharvesting, deforestation, population explosion and over grazing are the conspicuous biotic stresses which severely threatened the flora in the area which affect the population sustainability on earth crust.

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