

A Floristic Description of Flora and Ethnobotany of Samahni Valley (A.K.), Pakistan

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Abstract

The present study reveals a description of floristic features like life form, leaf size spectra and ethnobotany of valley Samahni. This study was carried out during the years 2006-2008, in Samahni valley district Bhimber A.K. (Pakistan), using methods consisting of semi-structured interviews employing a check list of questions, questionnaires, direct observations and biological inventories. It provides information about different local plants and their life form and leaf size spectra. 120 plant species recorded belonging to 46 families. Poaceae is the dominating with 14 members. Among these the most of the plants are used to cure common diseases like diarrhea, earache, fever, jaundice, flu, cough and other skin diseases. Snake bite, wound healing and burning of body part are also treated with local herbs. Many plants are used for multiple purposes like as medicines, food, fodder, fuel, furniture and shelter. Due to deforestation vegetation is eliminating rapidly. But the efforts and knowledge about plant wealth conservation is at initial stages. Megaphanerophytes are dominating followed by therophytes. Hemicryptophytes, Nanophanerophytes and Geophytes come after these respectively. All the types of vegetation depend upon presence of trees. In leaf size spectra Microphyllous are dominant followed by Megaphyllous. This work can be the base for advance research in different fields like phytochemistry, molecular biochemistry and antimicrobial plant secondary metabolites. For further research this ethnobotanical work is very important because it has come into existence with large experience of ancient history.

Keywords: Ethnobotany; Samahni valley; Muzaffarabad; Microphyllous; Megaphyllous.

Introduction

Study area

Samahni is a sub-division of district Bhimber and one of the most beautiful valleys of Azad Jammu and Kashmir. Scenic valley of Samahni is guarded by high mountains on all sides, offers breathtaking and mesmerizing natural scenes to its visitors, waterfalls come down mountain slopes as well as streams of crystal clear waters. The mountains across the whole valley dressed in jungles of pine trees add an extra touch to the stunning view. The valley holds a peaceful and calm atmosphere with pollution free environment from one end to the other. This valley is connected both with Mirpur & Bhimber through all weather black top roads.

It is located 17km in the North of Bhimber City and 30km in the North-East of Mirpur. Geographically it is

located near 33.05° latitude and 74.82 ° longitude and falls in sub-tropic zone. The entire valley of Samahni is approximately 55 km long and 10 km wide. It has north facing and south facing high mountains, with 1000 altitude and variable topography. Northern and Eastern North boundary is attached with Indian occupied Kashmir at district Rajory.

visiting sites

Although the whole valley is beautiful and attractive for tourists but some places are especially famous for their watchfulness. Among them Baghser, Jandi Chontra, Peer Gali and Patti hill are remarkable. Indian occupied famous mountain “Reech Pahari” is also present in valley Samahni.

Hydrography

Many seasonal and permanent streams pass through the valley. The main stream originates form Kaman Gosha Hill in Indian occupied Kashmir. After passing through the valley Samahni, Bhimber and Gujrat it joins the river Chanab. The primary sources of water are springs and rain water.

Topography

The area is mountainous and semi-mountainous. Central semi-mountainous and agricultural fields are surrounded by 1000m high Altitude Mountains. The mountains have steep, gentle and moderate slopes.

Climate

The climate is at variance. The average maximum and minimum temperature is 28.9 °C and 15.8 °C respectively. June and July are the hottest months of the year with 38.18°C and 37.18 ° C average temperatures respectively. Highest temperature recorded during June and July is 40 degree centigrade. December and January are the coldest months of the year with 6.34°C and 5.22°C average temperatures respectively. Minimum temperature recorded during December is 3.2 degree centigrade (Table: 1).

Rainfall

The total average rainfall is about 1233mm/ year. Average rainfall is 102.8 mm/ month. High rainfall is recorded in July and August, 264.94 and 255.26 respectively. Rainfall is low in October and November, 31.68 and 16.82 respectively. Hails usually occur in February and March (Table: 1).

Humidity

Humidity remains high in rainy season and in winters. And it remains high at morning time than the evening. The average humidity at morning and evening is 69.0 % and 48.75 % respectively. The highest value of humidity is 83.4, recorded in August at morning. The lowest value of humidity is 29 recorded in the month of May at evening (Table: 1).

Table 1. Measurement of Temperature, Humidity and Rainfall of the Samahni Valley.

Month	Temperature °C		Humidity %		Rainfall (mm)
	Max	Min	At 08:00am	At 05:00pm	
January	17.38	5.22	79.6	56.6	97.14
February	20.24	8.32	74.4	52.6	138.40

March	26.42	12.84	65.2	43	123.42
April	32.54	17.54	52.6	32.6	44.30
May	36.62	21.98	47	29	46.32
June	38.18	23.38	53.6	34.4	88.04
July	37.18	23.48	76.2	55.6	264.94
August	33.32	22.84	83.4	67.6	255.26
September	32.74	20.64	76.6	58.2	84.48
October	29.66	16.04	71	49.2	31.68
November	23.8	10.74	71	49.8	16.82
December	18.8	6.34	77.6	56.4	42.60
Average	28.9	15.8	69.0	48.75	102.8

Ethnobotany

Ethnobotany is the study of the relationship between plants and people: From "ethno" - study of people and "botany" - study of plants. Ethnobotany studies the complex relationships between (uses of) plants and cultures. The focus of ethnobotany is on how plants have been or are used, managed and perceived in human societies and includes plants used for food, medicine, cosmetics, dyeing, and textiles, for building, tools, clothing and social life. Ethnobotanical knowledge is as old as human civilization but the term ethnobotany was first coined by an American botanist, John Harshberger (1896). Manilal (1989) defines ethnobotany as the term today has come to denote the entire realm of direct relationship between plants and man. According to Arora (1997) ethnobotany in wider context denotes the entire realm of useful relationship between plants and man.

Life Form

Plants were categorized into life form classes after Raunkiaer (1934). Christen Christensen Raunkiaer (1934) a Danish botanist devised a system of Classification of Life-form perennating buds, which carry the plants through the unfavourable seasons of the year. Raunkiaer's system is thus based on the position of the buds, or growing points, which renew plant growth.

Raunkiaer's life form classes are as follows:

I. Phanerophytes: A tall, woody or herbaceous perennial with resting buds more than 25cm above soil level, e. g. deciduous trees and shrubs. Phanerophytes are further divided into megaphanerophytes, mesophanerophytes, microphanerophytes and nanophanerophytes.

II. Chamaephytes: perennating shoots or buds on the surface of the ground to about 25 cm above the surface - these buds can be protected by fallen leaves and snow: low bushes.

III. Hemicryptophytes: perennating buds at the surface of the ground where they are protected by soil and leaves: grasses etc and rosette plants.

IV. Geophytes: perennial buds buried in the ground on a bulb or rhizome, where they are protected from freezing or drying.

V. Therophytes: Annuals, with a complete life cycle from seed to seed during one season, surviving

unfavourable periods as seeds.

Other specialized life forms which are not classified on the basis of their perennating organs are

Succulents, Halophytes, and Epiphytes etc.

Leaf size spectrum

Oosting (1956) described that leaf size may help to understand the physiology of plant communities. Leaf spectra indicate the relationship of plants with area. There is a consistent variation of leaf, leaf size and texture between individual plants communities, these leaf characteristics also differ with various climatic conditions. Therefore leaf shape and size is an important physiognomic characteristic.

The leaf classes are determined according to Raunkiaer's diagram. There are four major classes. The lower limit of the size class is 25 sq. mm and each class is nine times larger than previous class.

Ashby (1963) reported that in desert climate nanophanerophytes taking the form of the characteristic grey spiny brushes, are more numerous while during the brief rainy seasons therophytes spring up and colour the whole landscape. Therophytes slightly increase at high altitudes while the Geophytes also show the same trend.

Batalha, M. A. & Martins, F.R. (2004) used Raunkiaer's system to classify the plant from the site of Brazil. The most represented life forms were phanerophytes and hemicryptophytes. The vegetation presents a wide physiognomic variation from grasslands to woodlands. The life form spectrum differed significantly from Raunkiaer's normal spectrum.

Chapman, R. R. & Crow, G. E. (1981) evaluated the response of ground cover vegetation to prescribed fire in relation to the life form of individual plant species. Chamaephytes were most severely affected by fire. Hemicryptophytes varied in their response and geophytes best survived the prescribed burn. Within each life form group variability existed in the modes of regeneration and recovery after burning.

Costa, R. C. (2007) studied the flora and life form spectrum in an area of deciduous thorn woodland in northeastern, Brazil. They encountered 133 species belonging to 47 families. The herbaceous/woody ratio was 1.4. The life-form spectrum was characterized according Raunkiaer's system. The life-form spectrum observed was: therophytes (42.9%), phanerophytes (26.3%), Chamaephytes (15.8%), hemicryptophytes (12.8%), and cryptophytes (2.3%). The present study indicates that the floristic richness of this biome has been underestimated.

Dastagir G. *et al.*, (2000) studied biological spectrum and did comparison of coefficient of communities between plant communities in Mai Dhani Hill Muzaffarabad. He reported that nanophanerophytes and hemicryptophytes increase as altitude increases while the megaphanerophytes decrease with increase in altitude. The tree layer is thinly dispersed and diversity of species decreased in December as compared to April.

Gorsi M. S. & Shahzad R. (2002) documented the ethnomedicinal importance of Dirkot. They forced to start regeneration work to save the traditional knowledge about plants.

Ishtiaq M. *et al.*, (2006 b) stated that plants are indirectly associated to the culture and tradition of the people. They stated 36 plant species used for the treatment of sexual diseases and birth control rate in Samahni valley. The most of the plants used as decoction and infusions. This data shows the dependent of people in villages

for their daily life needs and can provide the basis for further research.

Ishtiaq M. *et al.*, (2006 a) surveyed for the medicinal plants used only for animals. They provided the useful information about veterinary uses of plants. This ethnobotanical data has key role in life, society and economy of the people of the area and more over it can be initiative for phytochemical and pharmacological investigation about these medicinal plants.

Nazir A. & Malik Z. H. (2006) stated the life form of district Kotli. They reported that qualitatively nanophanerophytes are dominant followed by therophytes, hemicryptophytes and megaphanerophytes. Nanophanerophytes were also dominant. They were followed by megaphanerophytes and hemicryptophytes. Therophytes and geophytes were low in number.

Materials and Methods

Frequent visits were made in study area to collect the plants from the different localities of the area. Then their local names and parts used were recorded. To record local names, part uses interviews were conducted with local people in different villages individually. The altitude of the site from where the specimen is collected is taken with the help of Altimeter. Some useful discussions were held with some knowledgeable persons to confirm the information recorded from the informants. The collected specimens were dried and identified at herbarium placed in NARC (National agricultural research council) Pakistan.

Results

Table 2. Leaf Size Classes.

S/No.	Leaf Size Class	Symbol	Range
1.	Leptophyll	L	less than 25 sq. mm
2.	Nanophyll	N	between 25 sq. mm to 25 X 9 sq. mm
3.	Microphyll	Mi	between 25 X 9 sq. mm to 25 X 9 X 9 sq. mm
4.	Megaphyll	M	above 25 X 9 X 9 sq. mm

Table 3. Floristic Lists.

S/No.	Botanical Name	Family
1.	<i>Dicliptra roxburghiana</i> Nees	Acanthaceae
2.	<i>Justicia adhatoda</i> L	"
3.	<i>Achyranthes aspera</i> L	Amaranthaceae
4.	<i>Amaranthus hybridus</i> L	"
5.	<i>Amaranthus viridis</i> L	"

6.	<i>Celosia argentia</i> L	"
7.	<i>Mangifera Indica</i> L	Anacardiaceae
8.	<i>Pistacia chinensis</i> Bunge	"
9.	<i>Anethum graveolense</i> L	Apiaceae
10.	<i>Coriandrum sativum</i> L	"
11.	<i>Daucus carota</i> L	"
12.	<i>Carissa opaca</i> Stapf ex Haines	Apocynaceae
13.	<i>Nerium indicum</i> Mill	"
14.	<i>Calotropis procera</i> Alton. F.	Asclepiadaceae
15.	<i>Artemisia maritima</i> L	Asteraceae
16.	<i>Echinopse cornigerus</i> DC	"
17.	<i>Taraxacum officinale</i> Webber	"
18.	<i>Xanthium stromarium</i> L	"
19.	<i>Bombax ceiba</i> L	Bombacaceae
20.	<i>Cordia obliqa</i> Wild	Boraginaceae
21.	<i>Cynoglossum lanceolatum</i> Forsk	"
22.	<i>Brassica campestris</i> L	Brassicaceae
23.	<i>Brassica napus</i> L. Var. rapa.	"
24.	<i>Brassica oleraceae</i> L	"
25.	<i>Raphanus sativus</i> L	"
26.	<i>Bauhinia variegata</i> L	Caeselpinaceae
27.	<i>Cassia fistula</i> L	"
28.	<i>Cannabis sativa</i> L	Canabinaceae
29.	<i>Chenopodium ambrosidies</i> L	Chenopodiaceae

30.	<i>Citrullus colocynthus</i> L Schrad	Cucurbitaceae
31.	<i>Cucumis sativus</i> L	"
32.	<i>Cucurbita maxima</i> Duch. Ex. Lam	"
33.	<i>Cucurbita pepo</i> L	"
34.	<i>Luffa aegyptica</i> Mill	"
35.	<i>Memordica charantia</i> L	"
36.	<i>Praecitrullus fistulosus</i> (Stocks.) Pangalo.	"
37.	<i>Trichosnthus angaina</i> L	"
38.	<i>Cyperus rotundus</i> L	Cyperaceae
39.	<i>Euphorbia caducifolia</i> Hains.	Euphorbiaceae
40.	<i>Euphorbia helioscopia</i> L	"
41.	<i>Mallotus philippensis</i> Muell Arg.	"
42.	<i>Phyllanthus emblica</i> L	"
43.	<i>Cicer arietinum</i> L	Fabaceae
44.	<i>Phaseolus mungo</i> L	"
45.	<i>Fumaria indica</i> (Haussk) Pugsly.	Fumariaceae
46.	<i>Juglans regia</i> L	Juglandaceae
47.	<i>Mentha arvensis</i> L	Lamiaceae
48.	<i>Mentha sylvestris</i> L	"
49.	<i>Allium cepa</i> L	Liliaceae
50.	<i>Allium sativum</i> L	"
51.	<i>Aloe vera</i> L	"
52.	<i>Woodfordia fruticosa</i> (L) Kurz	Lythraceae
53.	<i>Abelmoschus esculentus</i> L Moench.	Malvaceae

54.	<i>Malva sylvestris</i> L	"
55.	<i>Malvestrum coromendlianum</i> L	"
56.	<i>Melia azedarech</i> L	Meliaceae
57.	<i>Acacia modesta</i> Wall.	Mimosaceae
58.	<i>Acacia nilotica</i> (L.) Delile.	"
59.	<i>Albizia lebbek</i> (L) Benth	"
60.	<i>Albizia procera</i> Benth	"
61.	<i>Broussonetia papyrifera</i> Vent	Moraceae
62.	<i>Ficus bengalensis</i> L	"
63.	<i>Ficus carica</i> L	"
64.	<i>Ficus elastica</i> Roxb.	"
65.	<i>Ficus virgata</i> L	"
66.	<i>Morus alba</i> L	"
67.	<i>Morus nigra</i> L	"
68.	<i>Eucalyptus citriodora</i> Parkere	Myrtaceae
69.	<i>Psidium guajava</i> L	"
70.	<i>Astragalus leucocephalus</i> Grah- ex-Benth	Oleaceae
71.	<i>Jasminum humile</i> L	"
72.	<i>Lotus corniculata</i> L	"
73.	<i>Olea ferruginea</i> Royle	"
74.	<i>Papaver somiferum</i> L	Papaveraceae
75.	<i>Butea monosperma</i> Lam. Taub.	Papilionaceae
76.	<i>Dalbergia sissoo</i> Roxb.	"
77.	<i>Pisum sativum</i> L	"

78.	<i>Lathyrus aphaca</i> L	"
79.	<i>Pinus roxburghii</i> Sargent	Pinaceae
80.	<i>Avena sativus</i> L	Poaceae
81.	<i>Cynodon dactylon</i> Pers	"
82.	<i>Dendrocalamus strictus</i> (Roxb,) Nees	"
83.	<i>Heteropogon controtus</i> L	"
84.	<i>Hordeum vulgare</i> L	"
85.	<i>Pennisetum typhoidum</i> L	"
86.	<i>Phragmites karka</i> Retx	"
87.	<i>Saccharum officinarum</i> L	"
88.	<i>Saccharum spontaneum</i> L	"
89.	<i>Setaria italica</i> (L.) P.Beauv.	"
90.	<i>Setaria pallidefusca</i> (Schumach) Stapf & C.E. Hubb.	"
91.	<i>Themeda anathera</i> Nees Hock.	"
92.	<i>Triticum aestivum</i> L	"
93.	<i>Zea mays</i> L	"
94.	<i>Rumax dentatus</i> L	Polygonaceae
95.	<i>Punica granatum</i> L	Punicaceae
96.	<i>Ziziphus jujuba</i> L	Rhamnaceae
97.	<i>Ziziphus nummularia</i> (Burm. f.) Wight. & Arn.	"
98.	<i>Eriobotrya japonica</i> (Thunb.) Lindl.	Rosaceae
99.	<i>Prunus armeniaca</i> Marsh.	"
100.	<i>Prunus persica</i> (L) Batsch	"
101.	<i>Pyrus communis</i> L	"

102.	<i>Pyrus malus</i> L	"
103.	<i>Rosa indica</i> L	"
104.	<i>Rubus fruticosus</i> L	Rubiaceae
105.	<i>Citrus limon</i> (L.) Burm. f.	Rutaceae
106.	<i>Zanthoxylum armatum</i> DC.	"
107.	<i>Populus alba</i> L	Salicaceae
108.	<i>Dodonaea viscosa</i> Jacq.	Sapindaceae
109.	<i>Verbascum thapsus</i> L	Scrophulariaceae
110.	<i>Capsicum annum</i> L	Solanaceae
111.	<i>Datura innoxia</i> Mill	"
112.	<i>Lycopersicon esculantum</i> L	"
113.	<i>Solanum melangena</i> L	"
114.	<i>Solanum miniatum</i> Benth.	"
115.	<i>Solanum surattense</i> Burm.f.	"
116.	<i>Solanum tuberosum</i> L	"
117.	<i>Vitex negundo</i> L	Verbenaceae
118.	<i>Viola serpens</i> Wall.ex.Roxb	Violaceae
119.	<i>Vitis vitifera</i> (L.) Theob.	Vitaceae
120.	<i>Tribulus terrestris</i> L.	Zygophyllaceae

Floristic Competition of Area

Among 46 recorded families the dominant family of the area is Poaceae with 14 species followed by Cucurbitaceae with 8 species. Family Moraceae and Solanaceae are third in this ranking with 7 species each. Rosaceae stands at fourth place with 6 species. Amaranthaceae, Asteraceae, Brassicaceae, Euphorbiaceae, Mimosaceae, Oleaceae and Papilionaceae have 4 species each. Apiaceae, Liliaceae, Malvaceae, Acanthaceae, Anacardiaceae, Apocynaceae, Boraginaceae, Caesalpiniaceae, Fabaceae, Lamiaceae, Myrtaceae, Rhamnaceae and Rutaceae have 3 species each. Acanthaceae, Anacardiaceae,

Apocynaceae, Boraginaceae, Caeselpinaceae, Fabaceae, Lamiaceae, Myrtaceae, Rhamnaceae and Rutaceae have 2 species each. While other 21 families have only 1 species each (Table 4).

Table 4. Floristic Competition of Area.

S/No.	Family	No. of Species
1	Poaceae	14
2	Cucurbitaceae	8
3	Moraceae	7
4	Solanaceae	7
5	Rosaceae	6
6	Amaranthaceae	4
7	Asteraceae	4
8	Brassicaceae	4
9	Euphorbiaceae	4
10	Mimosaceae	4
11	Oleaceae	4
12	Papilionaceae	4
13	Apiaceae	3
14	Liliaceae	3
15	Malvaceae	3
16	Acanthaceae	2
17	Anacardiaceae	2
18	Apocynaceae	2
19	Boraginaceae	2
20	Caeselpinaceae	2
21	Fabaceae	2
22	Lamiaceae	2
23	Myrtaceae	2
24	Rhamnaceae	2
25	Rutaceae	2
26	Asclepiadaceae	1
27	Bombacaceae	1
28	Canabinaceae	1
29	Chenopodiaceae	1
30	Cyperaceae	1
31	Fumariaceae	1
32	Juglandaceae	1
33	Lythraceae	1
34	Meliaceae	1
35	Papaveraceae	1
36	Pinaceae	1
37	Polygonaceae	1
38	Punicaceae	1
39	Rubiaceae	1

40	Salicaceae	1
41	Sapnidaceae	1
42	Scrophulariaceae	1
43	Verbenaceae	1
44	Violaceae	1
45	Vitaceae	1
46	Zygophyllaceae	1

Table 5. Classification of plants According to Life form & Leaf Spectra.

S/No.	Botanical Name	Family	Altitude	Local Name	Habit	Leaf Type	Life form
1.	<i>Dicliptra roxburghiana</i> Nees	Acanthaceae	680m	Kaloo	Herb	Mi	Th
2.	<i>Justicia adhatoda</i> L	"	720m	Baikar	Shrub	M	NP
3.	<i>Achyranthes aspera</i> L	Amaranthaceae	750m	Puthkanda	Herb	Mi	H
4.	<i>Amaranthus hybridus</i> L	"	720m	Ganhar	Herb	Mi	H
5.	<i>Amaranthus viridis</i> L	"	680m	Chulair	Herb	Mi	H
6.	<i>Celosia argentia</i> L	"	680m	Tandoola	Herb	Mi	Th
7.	<i>Mangifera Indica</i> L	Anacardiaceae	700m	Amb	Tree	M	MP
8.	<i>Pistacia chinensis</i> Bunge	"	960m	Kakoh	Tree	Mi	MP
9.	<i>Anethum graveolense</i> L	Apiaceae	720m	Soye	Herb	L	Th
10.	<i>Coriandrum sativum</i> L	"	720m	Dhania	Herb	N	Th
11.	<i>Daucus carota</i> L	"	720m	Gajar	Herb	L	Th
12.	<i>Carissa opaca</i> Stapf ex Haines	Apocynaceae	850m	Garanda	Shrub	Mi	NP
13.	<i>Nerium indicum</i> Mill	"	760m	Gandeera	Shrub	Mi	NP
14.	<i>Calotropis procera</i> Alton. F.	Asclepiadaceae	700m	Ak	Shrub	M	NP
15.	<i>Artemisia maritima</i> L	Asteraceae	680m	Chao	Herb	N	Th
16.	<i>Echinopse cornigerus</i> DC	"	680m	Kandiari	Herb	Mi	H
17.	<i>Taraxacum officinale</i> Webber	"	680m	Hand	Herb	Mi	H
18.	<i>Xanthium stromarium</i> L	"	680m	Jojra	Herb	M	Th
19.	<i>Bombax ceiba</i> L	Bombacaceae	760m	Simbal	Tree	Mi	MP
20.	<i>Cordia obliqa</i> Wild	Boraginaceae	700m	Lasoor	Tree	M	MP

21.	<i>Cynoglossum lanceolatum</i> Forrsk	"	760m	Leendra	Herb	Mi	H
22.	<i>Brassica campestris</i> L	Brassicaceae	700m	Sarsoon	Herb	M	Th
23.	<i>Brassica napus</i> L. Var. rapa.	"	680m	Gongloo	Herb	M	Th
24.	<i>Brassica oleraceae</i> L	"	680m	Gobhi	Herb	M	Th
25.	<i>Raphanus sativus</i> L	"	680m	Moolee	Herb	M	Th
26.	<i>Bauhinia variegata</i> L	Caeselpinaceae	960m	Kalyar	Tree	Mi	MP
27.	<i>Cassia fistula</i> L	"	880m	Amaltas	Tree	M	MP
28.	<i>Cannabis sativa</i> L	Canabinaceae	680m	Bhang	Herb	Mi	H
29.	<i>Chenopodium ambrosioides</i> L	Chenopodiaceae	680m	Bathua	Herb	Mi	Th
30.	<i>Citrullus colocynthus</i> L Schrad	Cucurbitaceae	690m	Tumma	Herb	M	Th
31.	<i>Cucumis sativus</i> L	"	700m	Kheera	Herb	M	Th
32.	<i>Cucurbita maxima</i> Duch. Ex. Lam	"	700m	Dabri	Herb	M	Th
33.	<i>Cucurbita pepo</i> L	"	700m	Kaddoon	Herb	M	Th
34.	<i>Luffa aegyptica</i> Mill	"	700m	Tori	Herb	M	Th
35.	<i>Memordica charantia</i> L	"	700m	Karela	Herb	M	Th
36.	<i>Praecitrullus fistulosus</i> (Stocks.) Pangalo.	"	680m	Teenda	Herb	M	Th
37.	<i>Trichosnthus angaina</i> L	"	700m	Parul	Herb	M	Th
38.	<i>Cyperus rotundus</i> L	Cyperaceae	840m	Madani Gass	Herb	L	H
39.	<i>Euphorbia caducifolia</i> Hains.	Euphorbiaceae	700m	Danda Thor	Shrub	N	NP
40.	<i>Euphorbia helioscopia</i> L	"	740m	Dodal	Herb	N	Th
41.	<i>Mallotus philippensis</i> Muell Arg.	"	900m	Kambeela	Tree	M	MP
42.	<i>Phyllanthus emblica</i> L	"	870m	Aamla	Tree	L	MP
43.	<i>Cicer arietinum</i> L	Fabaceae	690m	Chana	Herb	N	Th
44.	<i>Phaseolus mungo</i> L	"	690m	Dal Mong	Herb	M	Th
45.	<i>Fumaria indica</i> (Hauskk) Pugsly.	Fumariaceae	690m	Papra	Herb	L	Th
46.	<i>Juglans regia</i> L	Juglandaceae	900m	Akhrot	Tree	M	MP
47.	<i>Mentha arvensis</i> L	Lamiaceae	700m	Poodna	Herb	Mi	H

48.	<i>Mentha sylvestris</i> L	"	770m	Jangli Poodna	Herb	Mi	H
49.	<i>Allium cepa</i> L	Liliaceae	680m	Piaz	Herb	Mi	G
50.	<i>Allium sativum</i> L	"	680m	Thom	Herb	Mi	G
51.	<i>Aloe vera</i> L	"	680m	Kanwar Gandal	Shrub	M	NP
52.	<i>Woodfordia fruticosa</i> (L) Kurz	Lythraceae	840m	Thawi	Shrub	Mi	NP
53.	<i>Abelmoschus esculentus</i> L Moench.	Malvaceae	690m	Bhindi	Herb	Mi	Th
54.	<i>Malva sylvestris</i> L	"	680m	Sonchal	Herb	M	H
55.	<i>Malvestrum coromendlium</i> L	"	690m		Herb	Mi	H
56.	<i>Melia azedarech</i> L	Meliaceae	720m	Dharek	Tree	Mi	MP
57.	<i>Acacia modesta</i> Wall.	Mimosaceae	700m	Klah	Tree	L	MP
58.	<i>Acacia nilotica</i> (L.) Delile.	"	680m	Kikar	Tree	L	MP
59.	<i>Albizzia lebbek</i> (L) Benth	"	740m	Sree	Tree	L	MP
60.	<i>Albizzia procera</i> Benth	"	700m	Sree	Tree	Mi	MP
61.	<i>Broussonetia papyrifera</i> Vent	Moraceae	720m	Jangli toot	Tree	M	MP
62.	<i>Ficus bengalensis</i> L	"	780m	Bohr	Tree	M	MP
63.	<i>Ficus carica</i> L	"	870m	Tussa	Tree	M	MP
64.	<i>Ficus elastica</i> Roxb.	"	680m	Rubber plant	Tree	M	MP
65.	<i>Ficus virgata</i> L	"	740m	Phakwar	Tree	M	MP
66.	<i>Morus alba</i> L	"	720m	Shehtoot	Tree	M	MP
67.	<i>Morus nigra</i> L	"	720m	Toot	Tree	M	MP
68.	<i>Eucalyptus citriodora</i> Parkere	Myrtaceae	680m	Safeda	Tree	Mi	MP
69.	<i>Psidium guajava</i> L	"	770m	Amrood	Tree	M	MP
70.	<i>Astragalus leucocephalus</i> Grah-ex-Benth	Oleaceae	920m	Kathi	Shrub	N	NP
71.	<i>Jasminum humile</i> L	"	790m	Chamba	Shrub	Mi	NP
72.	<i>Lotus corniculata</i> L	"	800m	Makhan Booti	Herb	N	H
73.	<i>Olea ferruginea</i> Royle	"	880m	Kao	Tree	M	MP
74.	<i>Papaver somniferum</i> L	Papaveraceae	700m	Post	Herb	Mi	Th

75.	<i>Butea monosperma</i> Lam. Taub.	Papilionaceae	800m	Chichra	Tree	M	MP
76.	<i>Dalbergia sissoo</i> Roxb.	"	750m	Tahli	Tree	M	MP
77.	<i>Pisum sativum</i> L	"	680m	Matar	Herb	Mi	Th
78.	<i>Lathyrus aphaca</i> L	"	750m	JangliMatar	Herb	Mi	Th
79.	<i>Pinus roxburghii</i> Sargent	Pinaceae	840m	Cheer	Tree	L	MP
80.	<i>Avena sativus</i> L	Poaceae	700m	Gandail	Herb	N	Th
81.	<i>Cynodon dactylon</i> Pers	"	680m	Khabal	Herb	L	H
82.	<i>Dendrocalamus strictus</i> (Roxb.) Nees	"	680m	Bans	Tree	Mi	MP
83.	<i>Heteropogon controtus</i> L	"	700m	Kana	Herb	Mi	NP
84.	<i>Hordeum vulgare</i> L	"	700m	Jo	Herb	Mi	Th
85.	<i>Pennisetum typhoidum</i> L	"	700m	Bajra	Herb	Mi	Th
86.	<i>Phragmites karka</i> Retx	"	740m	Babyoon	Herb	Mi	H
87.	<i>Saccharum officinarum</i> L	"	680m	Ganna	Shrub	Mi	Th
88.	<i>Saccharum spontaneum</i> L	"	680m	Kahi	Herb	N	H
89.	<i>Setaria italica</i> (L.) P.Beauv.	"	690m	Kangni	Herb	N	Th
90.	<i>Setaria pallidefusca</i> (Schumach) Stapf & C.E. Hubb.	"	770m	Bhari ghas	Herb	L	H
91.	<i>Themeda anathera</i> Nees Hock.	"	680m	Saryala ghas	Herb	L	H
92.	<i>Triticum aestivum</i> L	"	690m	Kank	Herb	Mi	Th
93.	<i>Zea mays</i> L	"	700m	Mak	Herb	M	Th
94.	<i>Rumax dentatus</i> L	Polygonaceae	690m	Jangli Palak	Herb	M	H
95.	<i>Punica granatum</i> L	Punicaceae	780m	Daruna	Tree	Mi	MP
96.	<i>Ziziphus jujuba</i> L	Rhamnaceae	740m	Jand	Tree	Mi	MP
97.	<i>Ziziphus nummularia</i> (Burm.f.) Wight. & Arn.	"	740m	Koken ber	Tree	Mi	MP
98.	<i>Eriobotrya japonica</i> (Thunb.) Lindl.	Rosaceae	820m	Lokat	Tree	M	MP
99.	<i>Prunus armeniaca</i> Marsh.	"	700m	Khubani	Tree	M	MP
100.	<i>Prunus persica</i> (L) Batsch	"	800m	Aaru	Tree	M	MP
101.	<i>Pyrus communis</i> L	"	700m	Nashpati	Tree	M	MP

102.	<i>Pyrus malus</i> L	"	900m	Saib	Tree	M	MP
103.	<i>Rosa indica</i> L	"	680m	Gulab	Shrub	Mi	NP
104.	<i>Rubus fruticosus</i> L	Rubiaceae	820m	Aakhra	Shrub	M	NP
105.	<i>Citrus limon</i> (L.) Burm. f.	Rutaceae	680m	Lemoon	Tree	Mi	MP
106.	<i>Zanthoxylum armatum</i> DC.	"	700m	Timbar	Shrub	Mi	NP
107.	<i>Populus alba</i> L	Salicaceae	700m	Popular	Tree	M	MP
108.	<i>Dodonaea viscosa</i> Jacq.	Sapindaceae	800m	Sanatha	Shrub	Mi	NP
109.	<i>Verbascum thapsus</i> L	Scrophulariaceae	720m	Gidar tobacco	Herb	M	H
110.	<i>Capsicum annum</i> L	Solanaceae	720m	Surkh Murch	Herb	Mi	Th
111.	<i>Datura innoxia</i> Mill	"	700m	Dhatura	Herb	Mi	H
112.	<i>Lycopersicon esculantum</i> L	"	680m	Tamater	Herb	Mi	Th
113.	<i>Solanum melangena</i> L	"	720m	pattha	Herb	M	H
114.	<i>Solanum miniatum</i> Benth.	"	750m	Kach Mach	Herb	Mi	H
115.	<i>Solanum surattense</i> Burm.f.	"	700m	Mokari	Herb	Mi	H
116.	<i>Solanum tuberosum</i> L	"	680m	Aalu	Herb	M	G
117.	<i>Vitex negundo</i> L	Verbenaceae	720m	Bana	Shrub	Mi	NP
118.	<i>Viola serpens</i> Wall.ex.Roxb	Violaceae	870m	Banafsha	Herb	Mi	H
119.	<i>Vitis vitifera</i> (L.) Theob.	Vitaceae	820m	Dakh	Herb	M	H
120.	<i>Tribulus terrestris</i> L.	Zygophyllaceae	680m	Bhakra	Herb	Mi	H

Key: L = Leptophyll, N = Nanophyll, Mi = Microphyll, M = Megaphyll, MP = Megaphanerophytes, NP = Nanophanerophytes, H = Hemicryptophytes, G = Geophytes, Th = Therophytes

Table 6. Graphic Representation of Life Form Spectra.

Megaphanerophytes are dominant with 38 species followed by Therophytes with 36 species. Nanophanerophytes are small in number while geophytes are rare with 3 species.

S/No.	Life form class	No. of Sp.	%age
1	MP	38	31.6
2	NP	15	12.5
3	H	27	22.5
4	G	03	2.5

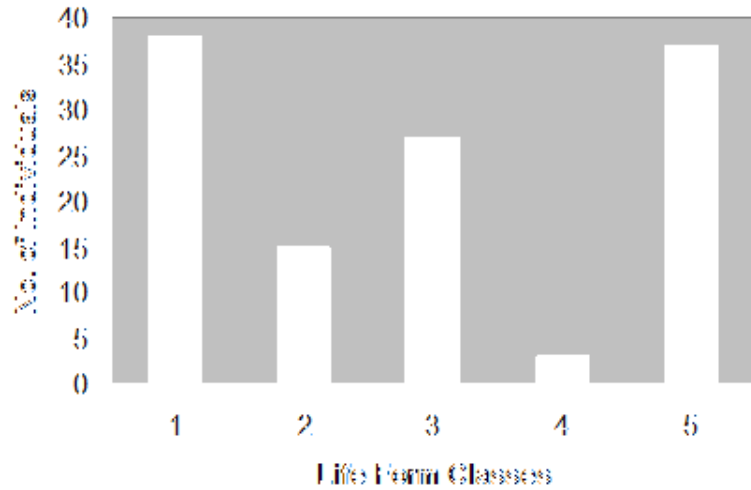


Table 7. Graphic Representations of Leaf Size Spectra.

Microphyllous leaf type plants are leading with 52 species followed by megaphyllous plants with 47 species. Nanophanerophytes are small in number with 9 species.

S/No.	Leaf Class	No. of Sp.	%age
1	L	12	10
2	N	09	7.5
3	Mi	52	43.3
4	M	47	39.2

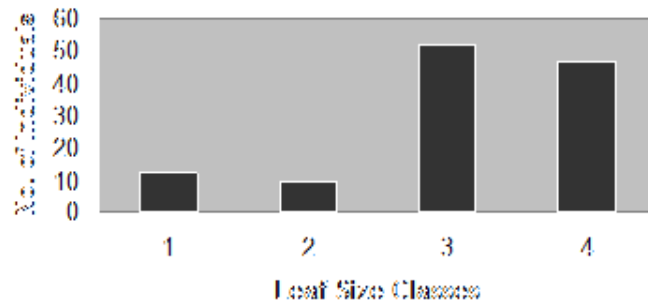


Table 8. Rare Plants.

S/No.	Botanical Name	Family	Local Name
1	<i>Bauhinia variegata</i> L	Caeselpinaceae	Kalyar
2	<i>Cordia obliqua</i> Wild	Boraginaceae	Lasoor
3	<i>Ficus bengalensis</i> L	Moraceae	Bohr
4	<i>Juglans regia</i> L	Juglandaceae	Akhrot

Table 9. Major vegetables of the Area.

S.No.	Botanical Name	Family	Local Name
1.	<i>Abelmoschus esculentus</i> L Moench.	Malvaceae	Bhindi
2.	<i>Allium cepa</i> L	Liliaceae	Piaz
3.	<i>Allium sativum</i> L	Liliaceae	Thom
4.	<i>Amaranthus hybridus</i> L	Amaranthaceae	Ganhar
5.	<i>Amaranthus viridis</i> L	Amaranthaceae	Chulair
6.	<i>Bauhinia variegata</i> L	Caeselpinaceae	Kalyar
7.	<i>Brassica campestris</i> L	Brassicaceae	Sarsoon
8.	<i>Brassica napus</i> L. Var. rapa.	Brassicaceae	Gongloo
9.	<i>Brassica oleraceae</i> L	Brassicaceae	Gobhi
10.	<i>Capsicum annum</i> L	Solanaceae	Surkh Murch
11.	<i>Celosia argentia</i> L	Amaranthaceae	Tandoola
12.	<i>Chenopodium ambrosidies</i> L	Chenopodiaceae	Bathua
13.	<i>Cucumis sativus</i> L	Cucurbitaceae	Kheera
14.	<i>Cucurbita maxima</i> Duch. Ex. Lam	Cucurbitaceae	Dabri
15.	<i>Cucurbita pepo</i> L	Cucurbitaceae	Kaddoon
16.	<i>Daucus carota</i> L	Apiaceae	Gajer
17.	<i>Dicliptra roxburghiana</i> Nees	Acanthaceae	Kaloo
18.	<i>Luffa aegyptica</i> Mill	Cucurbitaceae	Tori
19.	<i>Lycopersicum esculantum</i> L	Solanaceae	Tamater
20.	<i>Memordica charantia</i> L	Cucurbitaceae	Karela
21.	<i>Pisum sativum</i> L	Papilionaceae	Matar
22.	<i>Praecitrullus fistulosus</i> (Stocks.) Pangalo.	Cucurbitaceae	Teenda

23.	<i>Raphanus sativus</i> L	Brassicaceae	Moolee
24.	<i>Solanum melangena</i> L	Solanaceae	pattha
25.	<i>Solanum tuberosum</i> L	Solanaceae	Aalu
26.	<i>Trichosnthus angaina</i> L	Cucurbitaceae	Parul

Table 10. Major fruits of the Area.

S.No.	Botanical Name	Family	Local Name
1	<i>Carissa opaca</i> Stapf ex Haines	Apocynaceae	Garanda
2	<i>Citrus limon</i> (L.) Burm. f.	Rutaceae	Lemoon
3	<i>Eriobotrya japonica</i> (Thunb.) Lindl.	Rosaceae	Lokat
4	<i>Ficus carica</i> L	Moraceae	Tussa
5	<i>Ficus virgata</i> L	Moraceae	Phakwar
6	<i>Juglans regia</i> L	Juglandaceae	Akhrot
7	<i>Mangifera Indica</i> L	Anacardiaceae	Amb
8	<i>Morus alba</i> L	Moraceae	Shehtoot
9	<i>Morus nigra</i> L	Moraceae	Toot
10	<i>Phyllanthus emblica</i> L	Euphorbiaceae	Aamla
11	<i>Pistacia chinensis</i> Bunge	Anacardiaceae	Kakoh
12	<i>Prunus armeniaca</i> Marsh.	Rosaceae	Khubani
13	<i>Prunus armeniaca</i> Marsh.	Rosaceae	Khubani
14	<i>Prunus persica</i> (L) Batsch	Rosaceae	Aaru
15	<i>Psidium guajava</i> L	Myrtaceae	Amrood
16	<i>Punica granatum</i> L	Punicaceae	Daruna
17	<i>Pyrus communis</i> L	Rosaceae	Nashpati
18	<i>Pyrus malus</i> L	Rosaceae	Saib
19	<i>Rubus fruticosus</i> L	Rubiaceae	Aakhra
20	<i>Vitis vitifera</i> (L.) Theob.	Vitaceae	Dakh
21	<i>Ziziphus jujuba</i> L	Rhamnaceae	Jand
22	<i>Ziziphus nummularia</i> (Burm.f.) Wight. & Arn.	Rhamnaceae	Koken ber

Table 11. Cereal crops.

S.No.	Botanical Name	Family	Local Name
1	<i>Cicer arietinum</i> L	Fabaceae	Chana
2	<i>Hordeum vulgare</i> L	Poaceae	Jo
3	<i>Papaver somniferum</i> L	Papaveraceae	Post
4	<i>Pennisetum typhoidum</i> L	Poaceae	Bajra
5	<i>Phaseolus mungo</i> L	Fabaceae	Dal Mong
6	<i>Setaria italica</i> (L.) P.Beauv.	Poaceae	Kangni
7	<i>Triticum aestivum</i> L	Poaceae	Kank
8	<i>Zea mays</i> L	Poaceae	Mak

Table 12. Fuel wood and Furniture Plants.

S.No.	Botanical Name	Family	Local Name
1	<i>Acacia modesta</i> Wall.	Mimosaceae	Klah
2	<i>Acacia nilotica</i> (L.) Delile.	Mimosaceae	Kikar
3	<i>Albizia lebbek</i> (L) Benth	Mimosaceae	Sree
4	<i>Albizia procera</i> Benth	Mimosaceae	Sree
5	<i>Astragalus leucocephalus</i> Grah-ex-Benth	Oleaceae	Kathi
6	<i>Broussonetia papyrifera</i> Vent	Moraceae	Jangli toot
7	<i>Carissa opaca</i> Stapf ex Haines	Apocynaceae	Garanda
8	<i>Dalbergia sissoo</i> Roxb.	Papilionaceae	Tahli
9	<i>Dodonaea viscosa</i> Jacq.	Sapindaceae	sanatha
10	<i>Eucalyptus citriodora</i> Parkere	Myrtaceae	Safeda
11	<i>Ficus carica</i> L	Moraceae	Tussa
12	<i>Ficus virgata</i> L	Moraceae	Phakwar
13	<i>Mallotus philippensis</i> Muell Arg.	Euphorbiaceae	Kambeela
14	<i>Melia azedarach</i> L	Meliaceae	Dharek
15	<i>Morus alba</i> L	Moraceae	Shehtoot
16	<i>Morus nigra</i> L	Moraceae	Toot
17	<i>Olea ferruginea</i> Royle	Oleaceae	Kao
18	<i>Pinus roxburghii</i> Sargent	Pinaceae	Cheer
19	<i>Pistacia chinensis</i> Bunge	Anacardiaceae	Kakoh
20	<i>Populus alba</i> L	Salicaceae	Popular
21	<i>Woodfordia fruticosa</i> (L) Kurz	Lythraceae	Thawi

Table 13. Plants used as Fodder.

S.No.	Botanical Name	Family	Local Name
1	<i>Acacia modesta</i> Wall.	Mimosaceae	Klah
2	<i>Acacia nilotica</i> (L.) Delile.	Mimosaceae	Kikar
3	<i>Albizia lebbek</i> (L) Benth	Mimosaceae	Sree
4	<i>Albizia procera</i> Benth	Mimosaceae	Sree
5	<i>Astragalus leucocephalus</i> Grah-ex-Benth	Oleaceae	Kathi
6	<i>Avena sativa</i> L	Poaceae	Gandail
7	<i>Brassica campestris</i> L	Brassicaceae	Sarsoon
8	<i>Carissa opaca</i> Stapf ex Haines	Apocynaceae	Garanda
9	<i>Cynodon dactylon</i> Pers		Khabal
10	<i>Cyperus rotundus</i> L	Cyperaceae	Madani Gass
11	<i>Ficus virgata</i> L	Moraceae	Phakwar
12	<i>Morus alba</i> L	Moraceae	Shehtoot
13	<i>Morus nigra</i> L	Moraceae	Toot
14	<i>Pennisetum typhoidum</i> L		Bajra
15	<i>Pistacia chinensis</i> Bunge	Anacardiaceae	Kakoh

16	<i>Prunus armeniaca</i> Marsh.	Rosaceae	Khubani
17	<i>Raphanus sativus</i> L	Brassicaceae	Moolee
18	<i>Saccharum spontaneum</i> L		Baroon
19	<i>Setaria pallidifusca</i> (Schumach) Stapf & C.E. Hubb.		Bhari ghas
20	<i>Taraxacum officinale</i> Webber	Asteraceae	Hand
21	<i>Themeda anathera</i> Nees Hock.		Saryala ghas
22	<i>Triticum aestivum</i> L		Kank
23	<i>Zea mays</i> L		Mak
24	<i>Ziziphus jujuba</i> L	Rhamnaceae	Jand
25	<i>Ziziphus nummularia</i> (Burm.f.) Wight. & Arn.	"	Koken ber

Discussion

Plants serve several critical functions in the biosphere. They regulate the flow of numerous biogeochemical cycles; it is also of great importance in local and global energy balances. Second, plants strongly affect soil characteristics, including soil volume, chemistry and texture. Third, they serve as wildlife habitat and the energy source for the bulk of animal species on the planet. Plants also critically important to the world economy, particularly in the use of fossil fuel as an energy sources. Perhaps most importantly, they are primary source of oxygen in the atmosphere, enabling the aerobic metabolism systems to evolve and persist. Lastly, vegetation is psychologically important to humans, who have direct contact with plants for food, wood, fuel, shelter, and medicine.

The use of plants for the existence of human being is as old as practice as the human race itself. The accumulation of knowledge of plant use however co-evolved with human civilization through the experiential use of plants, generation after generation. The people of Samahni area depend mainly on plants for their food, fuel and for the treatment of common diseases.

120 species were recorded belonging to 46 families. Poaceae is the dominant family of the area. 101 species used as the treatment of common diseases. 67 species are used as food. 31 species are used as fodder for animals and 33 species used for fuel and furniture.

Most plants are used as multiple purposes. Common diseases like fever, earache, toothache, asthma and other skin diseases are treated locally. snake bite and wound healing are also treated by local plant medicines. Most of the plants are eaten or their extract or decoction is prepared for the treatment of diseases. Some are applied externally especially in case of skin diseases. Usually herbs are used as medicines.

In life form spectra Megaphanerophytes dominant with 38 species followed by Therophytes with 36 plant species and then Hemicryptophytes, Nanophanerophytes and geophytes come in dominating list. Nanophanerophytes and geophytes are very low in number with 15 and 3 species respectively.

In leaf size spectra Microphyllous class is dominant followed by megaphyllous class. Leptophyll and Nanophyll classes have small number of representatives.

The vegetation of the area is disturbed by the forest fire, deforestation and due shelling of Indian army.

The main dependent of people for their fuel and furniture needs is directly on plant so forests are eliminating rapidly. In this situation precious plant wealth is in danger. During field survey some important plant species belonging to Megaphanerophytes are small in number. Among these *Bauhinia variegata* L, *Cordia obliqua* Wild, *Ficus bengalensis* L and *Juglans regia* L are near to extinct from the area.

The production and growth of all other life forms depend upon the well growth and presence of Megaphanerophytes. But the knowledge and efforts to prevent the plant wealth from loss is on initial stages. It is needed that revolutionary steps should be taken to educate the people to abide by the laws and principles. Plantation campaigns ought to make. Only in this way we can save our valuable assets of plant diversity.

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