

STUDY OF PLANT DIVERSITY OF BHAGAT PHOOL SINGH MAHILA VISHWAVIDYALAYA KHANPUR KALAN, DISTRICT SONIPAT, HARYANA, INDIA

Savina¹, Amit Lath² and Manoj Kumar^{3*}

¹Assistant Professor, Department of Botany, B.P.S.I.H.L. (B.P.S.M.V.), Khanpur Kalan-131305,, Haryana, India

²Teaching Assistant, Department of Botany, B.P.S.I.H.L. (B.P.S.M.V.), Khanpur Kalan-131305,, Haryana, India

^{3*} Assistant Professor, Department of Botany, Govt. College, Kosli-123302, Haryana, India

ABSTRACT: The present paper aimed to study the existing flora of Bhagat Phool Singh Mahila Vishwavidyalaya, Khanpur Kalan of Sonipat district in Haryana. For this purpose, several surveys were conducted from December, 2017 to May, 2018. During the course of investigation a total of 231 plant species belongs to 195 genera and 76 families with majority formed by herbs and trees were recorded from this region. In the recorded 76 families, 73 families belongs from angiosperm and 3 from gymnosperm. The angiosperm comprises 60 families of dicotyledonous with 185 species, 13 families of monocotyledons with 42 species and 3 families of gymnosperm with 4 species. Among the various recorded families, Asteraceae is most dominant family consists with 21 species followed by Fabaceae, Poaceae, Solanaceae, and Euphorbiaceae, with 16, 15, 13, and 12 plants species respectively. The present study provides basic information about floristic composition, which will be supportive for management and conservation of the plant wealth of the area. Plants are enlisted with scientific name, local name, family and habit of each species.

KEYWORDS: BPSMV, Khanpur Kalan, Plant diversity, Families.

INTRODUCTION

Biodiversity is defined as the kinds and numbers of organisms and their patterns of distribution (Haidari and Rezaei, 2013). It is a part of our daily lives and livelihood and constitutes the resources upon which families, communities, nations and future generations depend. Human society from the very beginning of its appearance on this earth has been indispensably associated with the plant kingdom for its survival (Elizabeth and Dowdeswell, 1995; Kumar and Singh, 2013b). Plants provide our basic food crops, building materials and medicines, oils, lubricants, rubber, other latexes, resins, waxes, perfumes, dyes and fibers (Prance, 1997). India is a land of physical, cultural, social and linguistic diversity endowed by nature with enormous biological diversity. As a result India ranks amongst one of the 12 mega biodiversity countries of

the world and consists of 17,000 flowering plant species. It accounts for 8% of the global biodiversity with only 2.4% of the total land area in the world (Hajra and Mudgal, 1997; Reddy, 2008).

Plant diversity deals with the enumeration of plant species growing in a particular region at a particular time. Its assessments are considered as the basic requirement to understand the current status of plant diversity. The structure, composition, and vegetative functions are most significant ecological attributes of a particular ecosystem, which show variations in response to environmental as well as anthropogenic variables (Shaheen et al., 2012). Major threats to ecosystems and biodiversity are loss of habitat, fragmentation, overexploitation, pollution, invasions of alien species, and global climate change (Gairola et al., 2008).

The study of plant diversity provides required knowledge about the various plant species regarding their nomenclature, distribution, utility and ecology. Such studies also help to understand the basic aspects of biology such as speciation, isolation, endemism and evolution. Plant diversity is the utmost value to basic research because the data generated through these studies are highly useful in ecological, biogeographic, taxonomic and evolutionary studies. Knowledge generated by these studies are utilized by a breadth of applied research fields including land management, forestry, conservation biology, ecology, and range science. It forms the basis for regional floras and systematic monographs. Though, a number of studies have been undertaken in different parts of the India as well as in abroad (Yadav et al., 2004; Das and Das, 2005; Reif, 2006; Kamal-Uddin et al., 2009; Qureshi and Bhatti, 2010; Yadav et al., 2010; Qureshi et al., 2011; Rahman et al., 2012; Khatun et al., 2013; Kumar and Singh, 2013a & b; Singh and Kumar, 2013; Yadav and Bhandoria, 2013; Kaur et al., 2016; Kaur et al., 2017).

Due to large scale anthropogenic disturbances in the form of exclusive agricultural practices, industrialization, livestock feed, fuel-wood collection and forest fires, the floral diversity of our nation is facing threats of extinction, which will eventually lead to losses of genetic diversity. This is much needed to defend this valuable wealth for the interests of our own and of upcoming generations. Detailed studies are required for every habitat for proper documentation of species diversity. For a detailed and near to complete assessment, smaller areas provide better outputs as they can be thoroughly investigated. Keeping in view the aspects, a study of the existing plant diversity of BPSMV, Khanpur Kalan of Sonipat district in Haryana, India has been conducted.

MATERIAL AND METHODS

Description of the Study Area

BPSMV is the first women's state university of North India, established by the government of Haryana in August 2006 at the village Khanpur Kalan, Sonipat district depicted in Figure 1. The characteristics of BPSMV are given in Table 1.



Figure 1. Main Gate of BPSMV Khanpur Kalan

Table 1. Characteristics of BPSMV

Country	India
State	Haryana
District	Sonipat
Motto	Women Empowerment through education
Established	2006
Founder	Bhagat Phool Singh
Religious affiliation	Arya Samaj
Total Area	500 acre
Vice- chancellor	Professor Sushma Yadav
Student	About 7,000
Languages	Hindi, English, and Sanskrit
Location	Khanpur Kalan-131305
Website	www.bpswomenuniversity.ac.in
Nearest city	Gohana

Methodology

The study was carried out from December, 2017 to May, 2018, deals with various plant species. To record the vegetation of the study site, several field surveys have been undertaken at regular intervals throughout the six months. During the surveys necessary field equipments e.g. knife, hoe, plastic rope, field book, polythene bags etc. were used. Field observations and required information about each plant species were noted down on separate pages in a field book in order to study the diagnostic features. A tag bearing the same number was attached on each specimen to avoid any type of confusion during the identification. Standard methods of field surveys were followed for the collection of data and preparation of voucher specimens during the field trips. Voucher specimens for all plant species were collected in two or more in numbers and took the photographs of every plant in the field. In this study, floristic compositions of herbs, shrubs and trees were also recorded. The identification was done with the help of available floras and other related literatures (Maheshwari, 1963; Jain et al., 2000; Kumar, 2001; Negi, 2010; Singh et al., 2014; Singh, 2015).

RESULTS AND DISCUSSION

The results revealed the presence of 231 plant species belonging to 195 genera and 76 families including angiosperms and gymnosperms have been recorded from BPSMV Khanpur Kalan, district Sonipat, Haryana. The list of plant species of the study area is given in Table 2.

Table 2. List of Plant species of the study area

S. N.	Scientific name	Local name	Family	Habit
1.	<i>Abutilon indicum</i> (L.) Sweet	Kanghi	Malvaceae	Shrub
2.	<i>Acacia auriculiformis</i> Benth.	Auri	Fabaceae	Tree
3.	<i>Acacia nilotica</i> (L.) Delile	Babool	Fabaceae	Tree
4.	<i>Achyranthes asper</i> var. <i>borbonica</i> (Willd. ex Schult.) C.C.Towns	Chirchita	Amaranthaceae	Herb
5.	<i>Aegle marmelos</i> (L.) correa	Bel	Rutaceae	Tree
6.	<i>Agave americana</i> L.	Kamal cactus	Asparagaceae	Shrub
7.	<i>Ageratum conyzoides</i> (L.) L.	Jangli pudina	Asteraceae	Herb
8.	<i>Albizia lebbek</i> (L.) Benth	Siris	Fabaceae	Tree
9.	<i>Alcea rosea</i> L.	Hollyhock	Malvaceae	Herb
10.	<i>Allium cepa</i> L.	Piyaj	Amaryllidaceae	Herb
11.	<i>Allium sativum</i> L.	Lahsun	Amaryllidaceae	Herb
12.	<i>Aloe arborescens</i> Mill.	Guar pattha	Asphodelaceae	Herb
13.	<i>Aloe vera</i> L.	Ghritkumari	Asphodelaceae	Herb
14.	<i>Alstonia scholaris</i> (L.) R. Br.	Saptaparni	Apocynaceae	Tree

15.	<i>Alternanthera pungens</i> Kunth	Garundi	Amaranthaceae	Herb
16.	<i>Amaranthus viridis</i> L.	Chaulai	Amaranthaceae	Herb
17.	<i>Anagallis arvensis</i> L.	Neel	Primulaceae	Herb
18.	<i>Antirrhinum majus</i> L.	Dog flower	Plantaginaceae	Herb
19.	<i>Araucaria angustifolia</i> (Bertol).Kuntze	Monkey puzzele tree	Araucariaceae	Tree
20.	<i>Argemone mexicana</i> L.	Satyanashi	Papaveraceae	Herb
21.	<i>Artocarpus heterophyllus</i> Lam.	Kathal	Moraceae	Tree
22.	<i>Asparagus officinalis</i> L.	Stavari	Liliaceae	Herb
23.	<i>Asphodelus tenuifolius</i> Cav.	Piyaji	Xanthorrhoeaceae	Herb
24.	<i>Azadirachta indica</i> A.Juss.	Neem	Meliaceae	Tree
25.	<i>Avena sativa</i> L.	Jai	Poaceae	Herb
26.	<i>Barleria prionitis</i> L.	Pila bansa	Acanthaceae	Shrub
27.	<i>Bauhinia variegata</i> L.	Kachnar	Fabaceae	Tree
28.	<i>Beaucarnea recurvata</i> Lem.	Hathi paav	Asparagaceae	Shrub
29.	<i>Beta vulgaris</i> L.	Chkundar	Amaranthaceae	Herb
30.	<i>Blumea lacera</i> (Burm.f.) DC.	Jangli muli	Asteraceae	Herb
31.	<i>Boerhaavia diffusa</i> DC.	Punarnava	Nyctaginaceae	Herb
32.	<i>Bothriochloa pertusa</i> (L.) A.Camus	Hurricane grass	Poaceae	Herb
33.	<i>Bougainvillea spectabilis</i> Willd.	Boogan bel	Nyctaginaceae	Shrub
34.	<i>Brassica campestris</i> L.	Sarson	Brassicaceae	Herb
35.	<i>Brassica rapa</i> L.	Shalgam	Brassicaceae	Herb
36.	<i>Bryophyllum pinnatum</i> (Lam.) Oken	Patharchut	Crassulaceae	Herb
37.	<i>Butea monosperma</i> (Lam.) Taub	Dhak	Fabaceae	Tree
38.	<i>Calendula officinalis</i> L.	Kalendula	Asteraceae	Herb
39.	<i>Calliandra haematocephala</i> Hassk.	Kalliandra	Fabaceae	Shrub
40.	<i>Callistemon lanceolatus</i> (Sm.) Sweet	Bottle brush	Myrtaceae	Tree
41.	<i>Calotropis procera</i> (Aiton) Dryand.	Aak	Asclepiadiaceae	Shrub
42.	<i>Cascabela thevetia</i> (L.) Lippold	Pili kaner	Apocynaceae	Tree
43.	<i>Canna glauca</i> L.	Keli	Cannaceae	Herb
44.	<i>Cannabis sativa</i> L.	Bhang	Cannabinaceae	Herb
45.	<i>Capsicum annum</i> L.	Mirch	Solanaceae	Herb
46.	<i>Carica papaya</i> L.	Papita	Caricaceae	Tree
47.	<i>Cassia fistula</i> L.	Amaltas	Fabaceae	Tree
48.	<i>Casuarina equisetifolia</i> L.	Casuarina	Casurainaceae	Tree
49.	<i>Catharanthus roseus</i> (L.) G.Don	Sada bahar	Apocynaceae	Herb
50.	<i>Celosia argentea</i> L.	Lal murga	Amaranthaceae	Herb
51.	<i>Cenchrus biflorus</i> Roxb.	Bhurat ghass	Poaceae	Herb
52.	<i>Cenchrus ciliaris</i> L.	Anjan ghass	Poaceae	Herb

53.	<i>Cestrum nocturnum</i> L.	Rat ki rani	Solanaceae	Shrub
54.	<i>Chenopodium album</i> L.	Bathua	Chenopodiaceae	Herb
55.	<i>Chenopodium murale</i> L.	Khartwa	Chenopodiaceae	Herb
56.	<i>Chlorophytum comosum</i> (Thunb.)Jacques	Safed musli	Asparagaceae	Herb
57.	<i>Chrysanthemum achillaea</i> Linn.	Guldaudi	Asteraceae	Herb
58.	<i>Chrysopogon zizanioides</i> (L.)Roberty	Khus	Poaceae	Herb
59.	<i>Cinnamomum camphora</i> (L.)J.presl.	Kapoor	Lauraceae	Tree
60.	<i>Cirsium arvense</i> (L.) Scop.	Prickly thistle	Asteraceae	Herb
61.	<i>Citrus limon</i> (L.) Osbeck	Nimbu	Rutaceae	Shrub
62.	<i>Clerodendrum indicum</i> (L.) Kuntze	Bhant	Verbenaceae	Shrub
63.	<i>Coccinia grandis</i> (L.) Voigt	Kundru	Cucurbitaceae	Herb
64.	<i>Colocasia esculenta</i> (L.) Schott	Arvi	Araceae	Herb
65.	<i>Consolida ajacis</i> (L.) Lindl.	Larkspur	Ranunculaceae	Herb
66.	<i>Convolvulus arvensis</i> L.	Hirankhuri	Convolvulaceae	Herb
67.	<i>Cordia myxa</i> L.	Lasura	Boraginaceae	Tree
68.	<i>Cordyline fruticosa</i> (L.) A.Chev.	Good luck plant	Asparagaceae	Shrub
69.	<i>Coriandrum sativum</i> L.	Dhania	Apiaceae	Herb
70.	<i>Cosmos bipinnatus</i> Cav.	Cosmos	Asteraceae	Herb
71.	<i>Crinum asiaticum</i> L.	Pindar	Amaryllidaceae	Herb
72.	<i>Crinum darienense</i> Woodson	Sudarshan	Amaryllidaceae	Herb
73.	<i>Croton bonplandianus</i> Baill.	Kala bhangra	Euphorbiaceae	Herb
74.	<i>Cupressus sempervirens</i> L.	Kupressus	Cupressaceae	Tree
75.	<i>Cycas revoluta</i> Thunb.	Cycas palm	Cycadaceae	Tree
76.	<i>Cynodon dactylon</i> (L.) Pers.	Doob	Poaceae	Herb
77.	<i>Cyperus rotundus</i> L.	Motha	Cyperaceae	Herb
78.	<i>Dactyloctenium aegyptium</i> (L.) Willd.	Makra	Poaceae	Herb
79.	<i>Dahlia coccinea</i> Cav.	Dahlia	Asteraceae	Herb
80.	<i>Dalbergia sissoo</i> DC..	Shisham	Fabaceae	Tree
81.	<i>Datura innoxia</i> Mill.	Dhatura	Solanaceae	Herb
82.	<i>Datura metel</i> L.	Kala dhatura	Solanaceae	Herb
83.	<i>Daucus carota</i> L.	Gajar	Apiaceae	Herb
84.	<i>Delonix regia</i> (Hook.) Raf.	Gulmohar	Fabaceae	Tree
85.	<i>Dendrocalamus strictus</i> (Roxb.) Nees	Baans	Poaceae	Tree
86.	<i>Desmostachya bipinnata</i> (L.) Stapf	Daabh	Poaceae	Herb
87.	<i>Dianthus barbatus</i> L.	Dianthus	Caryophyllaceae	Herb
88.	<i>Dieffenbachia cannifolia</i> Engl.	Dumb cane	Areceae	Shrub
89.	<i>Dorotheanthus Bellidiformis</i> (Burm.f.)N.E.Br.	Burf	Aizoaceae	Herb
90.	<i>Dracaena arborea</i> Willd. Link	Dracaena	Asparagaceae	Shrub

91.	<i>Duranta erecta</i> L.	Pila durante	Verbinaceae	Shrub
92.	<i>Duranta obtusifolia</i> Kunth	Duranta	Verbenaceae	Shrub
93.	<i>Eclipta prostrata</i> (L.) L.	Bhringraj	Asteraceae	Herb
94.	<i>Elettaria cardamomum</i> (L.) Maton	Ilaichi	Zingiberaceae	Herb
95.	<i>Epipremnum aureum</i> (Linden & André) G.S.Bunting	Money plant	Araceae	Herb
96.	<i>Erigeron bonariensis</i> L.	Fleabane phoolani	Asteraceae	Herb
97.	<i>Erigeron canadensis</i> L.	Phoolani	Asteraceae	Herb
98.	<i>Eucalyptus coccifera</i> Hook.f.	Safeda	Myrtaceae	Tree
99.	<i>Euphorbia granulata</i> Forssk.	Dudhi	Euphorbiaceae	Herb
100.	<i>Euphorbia hirta</i> L.	Badi dudhi	Euphorbiacea	Herb
101.	<i>Euphorbia milli</i> Des moul.	Thorny Euphorbia	Euphorbiaceae	Herb
102.	<i>Euphorbia prostrata</i> Aiton	Chotti dhudhi	Euphorbiaceae	Herb
103.	<i>Euphorbia pulcherrima</i> Willd.ex Klotzsch	Poinsettia	Euphorbiaceae	Herb
104.	<i>Euphorbia royleana</i> Boiss	Danda thor	Euphorbiacea	Shrub
105.	<i>Euphorbia spinosa</i> L.	Spurge	Euphorbiaceae	Shrub
106.	<i>Euphorbia tirucalli</i> L.	Pensil plant	Euphorbiaceae	Shrub
107.	<i>Ficus benghalensis</i> L.	Bargad	Moraceae	Tree
108.	<i>Ficus benzamena</i> L.	Ficus plant	Moraceae	Tree
109.	<i>Ficus carica</i> L.	Anjir	Moraceae	Tree
110.	<i>Ficus racemosa</i> L.	Gullar	Moraceae	Tree
111.	<i>Ficus religiosa</i> L.	Peepal	Moraceae	Tree
112.	<i>Ficus virens</i> Aiton	Pilkhan	Moraceae	Tree
113.	<i>Foeniculum vulgare</i> Mill.	Saunf	Apiaceae	Herb
114.	<i>Fumaria parviflora</i> Lam.	Papara	Papaveraceae	Herb
115.	<i>Gnaphalium polycephalum</i> Michx.	Cudweed	Asteraceae	Herb
116.	<i>Gomphrena serrata</i> L	Gul-e-makhmal	Amaranthaceae	Herb
117.	<i>Hamelia patens</i> Jacq.	Firebush	Rubiaceae	Shrub
118.	<i>Helianthus annuus</i> L.	Suraj mukhi	Asteraceae	Shrub
119.	<i>Heliotropium curassavicum</i> L.	Hathajori	Boraginaceae	Herb
120.	<i>Heliotropium europaeum</i> L.	Ketha	Boraginaceae	Herb
121.	<i>Hibiscus rosa sinensis</i> L.	Gurhal	Malvaceae	Shrub
122.	<i>Iberis amara</i> L.	Candytuft	Brassicaceae	Herb
123.	<i>Imperata cylindrica</i> (L.) Raeusch.	Dab	Poaceae	Herb
124.	<i>Ixora coccinia</i> L.	Rugmini	Rubiaceae	Shrub
125.	<i>Jatropha integerrima</i> L.	Jangli arand	Euphorbiaceae	Tree

126.	<i>Justica adathoda</i> L.	Nili nargandi	Acanthaceae	Shrub
127.	<i>Kigelia africana</i> (Lam.) Benth.	Balam khira	Bignoniaceae	Tree
128.	<i>Lantana camara</i> L.	Tulsidal	Verbenaceae	Shrub
129.	<i>Launaea nudicaulis</i> (L.) Hook.f.	Jangli gobhi	Asteraceae	Herb
130.	<i>Lawsonia inermis</i> L.	Mehndi	Lythraceae	Shrub
131.	<i>Lepidium didymum</i> L.	Jangli hala	Brassicaceae	Herb
132.	<i>Leucaena leucocephala</i> (Lam.) de Wit	Subabul	Fabaceae	Tree
133.	<i>Luffa echinata</i> Roxb.	Bindaal	Cucurbitaceae	Herb
134.	<i>Lycopersicon esculentum</i> Mill.	Tamatar	Solanaceae	Herb
135.	<i>Magnolia champaca</i> (L.) Baill.ex Pierre	Champa	Magnoliaceae	Tree
136.	<i>Malva parviflora</i> L.	Malva	Malvaceae	Herb
137.	<i>Malvastrum coromandelianum</i> (L.) Garcke	Kharenti	Malvaceae	Herb
138.	<i>Mangifera indica</i> L.	Aam	Anacardiaceae	Tree
139.	<i>Mazus pumilus</i> (Burm.f.) Steenis	Mazus	Mazaceae	Herb
140.	<i>Melia azedarach</i> L.	Bakain	Meliaceae	Tree
141.	<i>Melilotus indicus</i> (L.) All.	Metha	Fabaceae	Herb
142.	<i>Mentha arvensis</i> L.	Pudina	Lamiaceae	Herb
143.	<i>Mirabilis jalapa</i> L.	Four O'Clock plant	Nyctaginaceae	Herb
144.	<i>Monstera deliciosa</i> Liebm.	Ceriman	Araceae	Herb
145.	<i>Moringa oleifera</i> Lam.	Sainjna	Moringaceae	Tree
146.	<i>Morus alba</i> L.	Shahtoot	Moraceae	Tree
147.	<i>Murraya koenigii</i> (L.)Spreng.	Karipatta	Rutaceae	Shrub
148.	<i>Murraya paniculata</i> (L.) Jack	Kamini	Rutaceae	Shrub
149.	<i>Musa paradisiacal</i> L.	Kela	Musaceae	Shrub
150.	<i>Neolamarckia cadamba</i> (Roxb.) Bosser	Kadam	Rubiaceae	Tree
151.	<i>Nerium oleander</i> L.	Kaner	Apocynaceae	Shrub
152.	<i>Nicotiana plumbaginifolia</i> Viv.	Ban tamakhu	Solanaceae	Herb
153.	<i>Nyctanthes arbor-tristis</i> L.	Har-singhar	Oleaceae	Tree
154.	<i>Ocimum basilicum</i> L.	Marwa	Lamiaceae	Herb
155.	<i>Ocimum sanctum</i> L.	Tulsi	Lamiaceae	Herb
156.	<i>Oxalis corniculata</i> L.	Amrul	Oxalidaceae	Herb
157.	<i>Oxalis latifolia</i> Kunth	Khatmitthi	Oxalidaceae	Herb
158.	<i>Papaver rhoeus</i> L.	Khuskhus	Papeveraceae	Herb
159.	<i>Parthenium hysterophorus</i> L.	Gajar ghass	Asteraceae	Herb
160.	<i>Pedilanthus tithymaloides</i> (L.) Poit.	Airi	Euphorbiaceae	Shrub
161.	<i>Peristrophe bicalyculata</i> (Retz.) Nees	Guga	Acanthaceae	Herb
162.	<i>Petunia hybrida</i> Vilm.	Petunia	Solanaceae	Herb

163.	<i>Phalaris minor</i> Retz.	Bluri	Poaceae	Herb
164.	<i>Phlox drumondii</i> Hook	Phlox	Polemoniaceae	Herb
165.	<i>Phoenix dactylifera</i> L.	Khajur	Arecaceae	Tree
166.	<i>Phyla nodiflora</i> (L.) Greene	Jal buti	Verbenaceae	Herb
167.	<i>Phyllanthus emblica</i> L.	Amla	Phyllanthaceae	Tree
168.	<i>Phyllanthus fraternus</i> G.L.Webster	Bhumi amala	Phyllanthaceae	Herb
169.	<i>Physalis minima</i> L.	Rasbhari	Solanaceae	Herb
170.	<i>Plumeria alba</i> L.	Plumeria	Apocynaceae	Shrub
171.	<i>Poa annua</i> L.	Poa ghash	Poaceae	Herb
172.	<i>Polyalthia longifolia</i> (Sonn.) Thwaites	Ashoka	Annonaceae	Tree
173.	<i>Pongamia pinnata</i> (L.) Pierre	Karanj	Fabaceae	Tree
174.	<i>Populus alba</i> L.	Poplar	Salicaceae	Tree
175.	<i>Portulaca oleracea</i> L.	Khursa	Portulacaceae	Herb
176.	<i>Psidium guajava</i> L.	Amrud	Myrtaceae	Tree
177.	<i>Pterospermum acerifolium</i> (L.) Willd.	Kanak champa	Malvaceae	Tree
178.	<i>Punica granatum</i> L.	Anar	Lythraceae	Shrub
179.	<i>Putranjiva roxburghii</i> Wall.	Putrajiv	Putranjivaceae	Tree
180.	<i>Quisqualis caudata</i> Craib	Madhu malati	Combretaceae	Herb
181.	<i>Ranunculus sceleratus</i> L.	Buttercup	Ranunculaceae	Herb
182.	<i>Raphanus raphanistrum sub spp. Sativus</i> (L.) Domin	Muli	Brassicaceae	Herb
183.	<i>Rhapis excelsa</i> (Thunb.)A. Henry	Lady palm	Arecaceae	Herb
184.	<i>Ricinus communis</i> L.	Arand, Arandi	Euphorbiaceae	Tree
185.	<i>Rosa indica</i> L.	Gulab	Rosaceae	Shrub
186.	<i>Roystonea regia</i> (Kunth) O.F.Cook	Royal palm	Arecaceae	Tree
187.	<i>Rumex dentatus</i> L.	Jangli palak	Polygonaceae	Herb
188.	<i>Saccharum maximum</i> (Brongn.) Trin.	Munja	Poaceae	Herb
189.	<i>Saccharum officinarum</i> L.	Ganna	Poaceae	Herb
190.	<i>Salvia officinale</i> L.	Kamrkash	Lamiaceae	Herb
191.	<i>Sansevieria trifasciata</i> Prain	Tongue plant	Asparagaceae	Herb
192.	<i>Sapindus saponaria</i> L.	Ritha	Sapindaceae	Tree
193.	<i>Senna siamea</i> (Lam.) H.S. Irwin & Barneby	Kassod	Fabaceae	Tree
194.	<i>Sisymbrium irio</i> L.	Khub kalan	Brassicaceae	Herb
195.	<i>Solanum melongena</i> L.	Baingan	Solanaceae	Herb
196.	<i>Solanum nigrum</i> L.	Mokoi	Solanaceae	Herb
197.	<i>Solanum tuberosum</i> L.	Aalu	Solanaceae	Herb
198.	<i>Solanum virginianum</i> L.	Kateli, Kantakar	Solanaceae	Herb
199.	<i>Sonchus asper</i> (L.) Hill	Pili dhudhi	Asteraceae	Herb
200.	<i>Sonchus oleraceus</i> L.	Dodhak	Asteraceae	Herb
201.	<i>Spergula arvensis</i> L.	Jangli dhania	Caryophyllaceae	Herb
202.	<i>Stellaria media</i> (L.) Vill	Buch-bucha	Caryophyllaceae	Herb

203.	<i>Syzygium cumini</i> (L.) Skeels	Jamun	Myrtaceae	Tree
204.	<i>Spinacia oleracea</i> L.	Palak	Amaranthaceae	Herb
205.	<i>Swertia bimaculata</i> (Siebold& Zucc.) Hook.F. & Thomson ex C.B. Clarke	Chirayita	Gentianaceae	Herb
206.	<i>Tabernaemontana divaricata</i> (L.) R.Br. ex Roem. & Schult.	Chandni	Apocynaceae	Shrub
207.	<i>Tagetes erecta</i> L	Genda	Asteraceae	Herb
208.	<i>Tamarix aphylla</i> (L.) H.Karst.	Firans	Fabaceae	Tree
209.	<i>Tecoma stans</i> (L.)Juss. Ex Kunth	Piliya	Bignoniaceae	Shrub
210.	<i>Tectona grandis</i> L.f.	Sagwan	Lamiaceae	Tree
211.	<i>Terminalia arjuna</i> (Roxb. ex DC.) Wight & Arn	Arjun	Combretaceae	Tree
212.	<i>Thuja plicata</i> Donn ex D.Don	Morpankhi	Cupressaceae	Shrub
213.	<i>Tinospora cardifolia</i> (Thunb)Miers	Giloe	Menispermaceae	Herb
214.	<i>Trachyspermum ammi</i> (L.)Sprague ex Turrill	Ajwain	Apiaceae	Herb
215.	<i>Tradescantia pallida</i> (Rose)D.R.Hunt	Nilakantha	Commelinaceae	Herb
216.	<i>Trianthema portulacastrum</i> L.	Trianthema	Aizoaceae	Herb
217.	<i>Tribulus terrestris</i> L.	Bhankri	Zygophyllaceae	Herb
218.	<i>Tridax procumbens</i> (L.) L.	Tal-muriya	Asteraceae	Herb
219.	<i>Trifolium alexandrinum</i> L.	Tripatra	Fabaceae	Herb
220.	<i>Trigonella foenum-graecum</i> L.	Methi	Fabaceae	Herb
221.	<i>Triticum aestivum</i> L.	Gehun	Poaceae	Herb
222.	<i>Verbesina encelioides</i> (Cav.) Benth. & Hook.f. ex A.Gray	Jangli surajmukhi	Asteraceae	Herb
223.	<i>Vernonia cinerea</i> L.	Vernonia	Asteraceae	Herb
224.	<i>Vicia sativa</i> L.	Vicia	Fabaceae	Herb
225.	<i>Viola tricolor</i> L.	Pansy	Violaceae	Herb
226.	<i>Withania somnifera</i> (L.) Dunal	Ashwagandha	Solanaceae	Shrub
227.	<i>Xanthium strumarium</i> L.	Gokhru	Asteraceae	Herb
228.	<i>Yucca aloifolia</i> L.	Yucca	Asparagaceae	Shrub
229.	<i>Zinnia elegans</i> L.	Zinnia	Asteraceae	Herb
230.	<i>Ziziphus jujuba</i> Mill.	Ber	Rhamnaceae	Tree
231.	<i>Ziziphus nummularia</i> (Burm.f.) Wight & Arn	Jharber	Rhamnaceae	Shrub

In the present study, a total of 231 plants species recorded belonging to dicotyledonous (60 families, 154 genera with 185 species), monocotyledons (13 families, 37 genera with 42 species) and gymnosperms (3 families, 4 genera with 4 species). On the consideration of habit groups, dominancy revealed by herbaceous flora (136 species) followed by shrubs (39 species), and trees (56 species) as indicated in Figure 2.

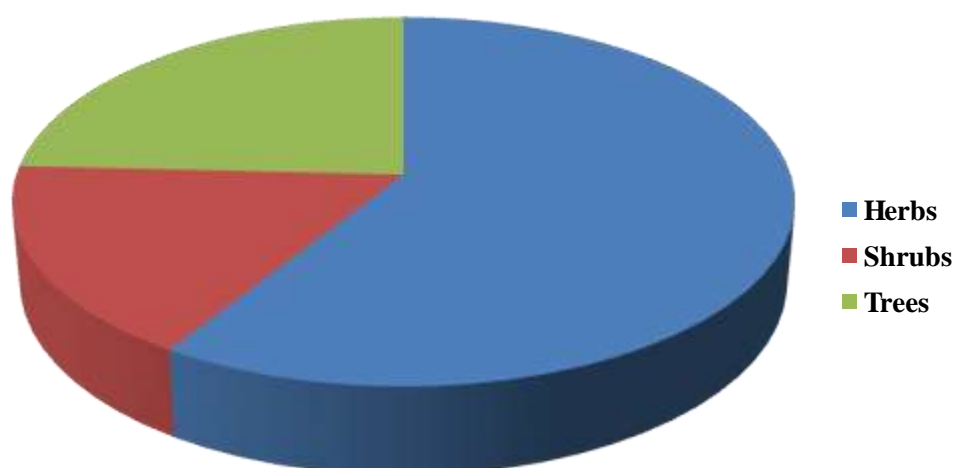


Figure: 2. Habit of plant species

High percentage of herbs and shrubs may be due to existing quality of soil and prevailing climatic factors like temperature and rainfall. Among the recorded families, 5 largest families represented in the study area are Asteraceae with 21 species followed by Fabaceae, Poaceae, Solnaceae, and Euphorbiaceae with 16, 15, 13, and 12, plants species respectively as shown in Figure 3.

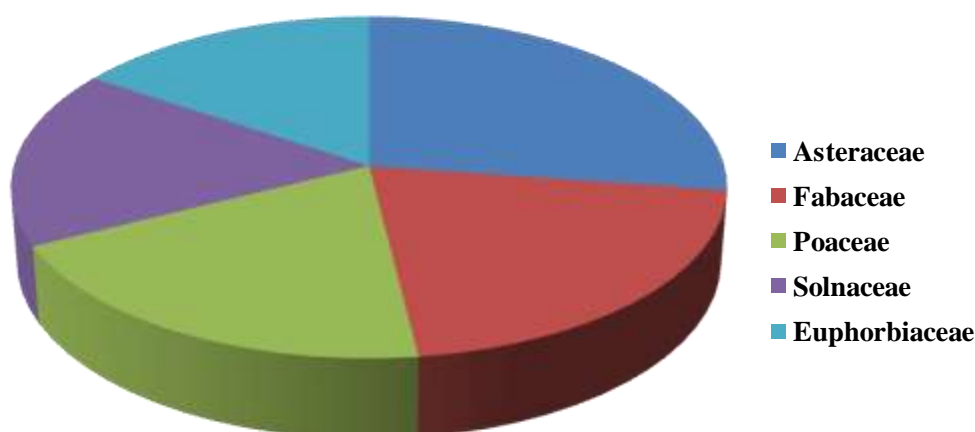


Figure: 3. Dominant plant families

This present study reveals that the BPSMV area provides eco-friendly environment to the students as well as sources for the practical and research materials to the faculty of Life Sciences. The present study, though preliminary, provides an insight of the plant wealth of the area. Subsequent study (whole year) is required to recognize the vegetation dynamics, climate change and other ecological aspects of the area which will help in management and conservation practices for long term sustainability. The knowledge of the vegetation structure of an area is the major requirement for any ecological and biodiversity conservation strategies (Yavari and Shahgolzari, 2010). Floristic data are integral requirement for any biodiversity conservation and management programmes (Mace, 2004; Novacek, 2008; Webb et al., 2010). There are a number of floristic

studies have been reported to reveal the significance of taxonomic data for the biodiversity conservation has been reported by the various researchers (Wheeler, 2004; Raczkowski and Wenzel, 2007; Yadav et al., 2014). In the light of above findings, it is recommended that a long term comprehensive study should be undertaken to document the ecological status of complete flora of the study area.

CONCLUSION

Biodiversity conservation is a major problem of the day and taxonomic knowledge is crucial to meet the challenges of biodiversity conservation in the 21st century. It is of fundamental importance for understanding biodiversity and ecosystem functioning, as it provides us with the data to explore and describe biodiversity through scientific analysis. The present study provides the basic information about the different plant species of BPSM Vishwavidyalaya Khanpur Kalan, revealed that this area is rich in diversity of wild plants as well as cultivated plants, and in present work a total 231 species belongs to 195 genera and 76 families have been recorded with majority formed by herbs and trees. The Asteraceae is represented the most dominant family with 21 species followed by Fabaceae, Poaceae, Solanaceae, and Euphorbiaceae, with 16, 15, 13, and 12, plants species respectively. Such a study could play an important role for the local and regional authorities interested in to conserve this precious diversity for better future use in welfare of coming generations and sustainable development of the area.

COMPETING INTERESTS

The authors declared that they have no competing interests.

ACKNOWLEDGEMENTS

The authors expressed their sincere thanks to the Vice- chancellor of BPSMV and Principal, BPSIHL (BPSMV), Khanpur Kalan for their cooperation and encouragement. Authors are also gratefully acknowledged Professor S. Srivastava, Department of Genetics, University of Delhi South Campus, New Delhi, India for her suggestions and guidance.

REFERENCES

1. Das, T. and A.K. Das (2005). Inventorying plant biodiversity in home gardens: A case study in Barak Valley, Assam, North East India. *Current Science*, 89 (1): 155-163.
2. Elizabeth, M. and Dowdeswell, D. (1995). In *Global Biodiversity Assessment*, UNEP, CUP, UK, pp: 80-89.
3. Gairola, S., Rawal, R.S. and Todaria, N.P. (2008). Forest vegetation patterns along an altitudinal gradient in sub-alpine zone of West Himalaya, India. *African Journal of Plant Science*, 2(6) 42-48.
4. Haidari, M. and Rezaei, D. (2013). Study of Plant Diversity in the Northern Zagros Forest (Case Study: Marivan Region). *International Journal of Advanced Biological and Biomedical Research*, 1: 1-10.

5. Hajra, P.K. and Mudgal, V. (1997). Plant Diversity Hotspots in India-An Overview, BSI India.
6. Jain, S.P., Singh, S.C., Verma, D.M., Singh, J.S. and Kumar, S. (2000). Flora of Haryana. Central Institute Medicinal and Aromatic Plants (CIMAP), Lucknow, India, 1-266.
7. Kamal-Uddin, M., Juraimi, A.S. Begum, M., Ismail, M.R., Rahim, A.A. and Othman, R. (2009). Floristic composition of weed community in turf grass area of west peninsular Malaysia. *International Journal of Agriculture and Biology*, 11: 13-20.
8. Kaur, R., Singh, N. and B.D., Vashistha (2016). Flowering Plant Diversity of District Karnal, Haryana, India. *International Journal of Life-Sciences*, 2016, 4 (3): 361-371.
9. Kaur, M. Singh, N. and Vashistha, B.D. (2017). Floristic diversity of Ambala district, Haryana, India. *Plant Archives*, 17(2): 993-1003.
10. Khatun, M., Hassan, M. A., Islam, S. N. and Rahman, M. O. (2013). Taxonomy of the Leafy Vegetables in Bangladesh. *Bangladesh Journal of Plant Taxonomy*, 20(1): 95-123.
11. Kumar, S. (2001). Flora of Haryana: (Materials). Bishen Singh Mahendra Pal Singh, Dehradun, India.
12. Kumar, M. and Singh, M. (2013a). Study of Plant Diversity of Karnal District, Haryana, India. *International Journal of Pharmacy & Life Sciences*, 4(4): 2573-2582.
13. Kumar, M. and Singh, M. (2013b). Study of plant diversity of Rewari District, Haryana, India. *World Journal of Pharmacy*, 1(4):260-271.
14. Mace, G. (2004). The role of taxonomy in species conservation. *Philosophical Transactions*, 359(1444):711-719.
15. Maheshwari, J.K. (1963). The Flora of Delhi. Council of Scientific and Industrial Research, New Delhi.
16. Negi, S.S. (2010). Floristic diversity of Shiwalik Hills, Haryana. Forest Department, Haryana.
17. Novacek, M. (2008). Engaging the public in biodiversity issues. *Proceedings of the National Academy of Sciences*, 105(Suppl. 1):11571-11578.
18. Prance, G.T. (1997). Plant Diversity and Conservation. 9th Biennial Botanical Conference, 25: 29-37.
19. Qureshi, R. and Bhatti, G.R. (2010). Floristic Inventory of Pai Forest, Nawab Shah, Sindh, Pakistan. *Pakistan Journal of Botany*, 42(4): 2215-2224.
20. Qureshi, R., Bhatti, G. R. and Shabbir, G. (2011). Floristic Inventory of Pir Mehr Ali Shah Arid Agriculture University Research farm at Koont and its surrounding areas. *Pakistan Journal of Botany*, 43(3): 1679-1684.
21. Raczkowski, J. and Wenzel, J. (2007). Biodiversity studies and their foundation in taxonomic scholarship. *Bio-Science*, 57(11): 974-979.

22. Rahman, M.O., Antara, R.T. Begum, M. and Abul Hassan, M.D. (2012). Floristic Diversity of Dhamrai Upazila of Dhaka with emphasis on Medicinal Plants. *Bangladesh Journal of Botany*, 41(1): 71-85.
23. Reddy, C.S. (2008). Catalogue of Invasive Alien Flora of India, *Life Science Journal*, 5: 84-89.
24. Reif, B. P. (2006). A Vascular Plant Inventory of the Santa Fe National Forest (including the Valles Caldera National Preserve) and Vicinity, North-Central New Mexico. M.Sc. Thesis, University of Wyoming, Laramie, WY.
25. Shaheen, H., Ullah, Z., Khan, S.M. and Harper, D.M. (2012) Species composition and community structure of western Himalayan moist temperate forests in Kashmir. *Forest Ecology and Management*, 278: 138-145.
26. Singh, M. (2015). Floristic Diversity of plants of District Mahendergarh (Haryana) India. Ph.D. thesis. Department of Botany, MDU, Rohtak.
27. Singh, M. and Kumar, M. (2013). Study of plant diversity of Jind District, Haryana, India. *Asian Journal of Plant Science and Research*, 3(3):44-53.
28. Singh, N., Singh, B. and Vashistha, B.D. (2014) Genus *Solanum* L. in North and North Eastern Haryana (India): Diversity, Ecological Status and Ethnobotanical Significance. *Phytodiversity* 1 (1&2): 32-40.
29. Yadav, S.S., Kohli, R.K., Batish, D.R., and Singh, H.P. (2004). Ecological Status of *Calotropis procera* (Ait.) R. Br. In different parts of Haryana State. *Bulletin of Biological Sciences*, 2(2): 126-129.
30. Yadav, S., Yadav, J.P., Arya, V. and Panghal, M. (2010). Sacred groves in conservation of plant biodiversity in Mahendergarh district of Haryana. *Indian journal of traditional knowledge*, 9(4): 693-700.
31. Yadav, S.S. and Bhandoria, M.S. (2013). Ethnobotanical exploration in Mahendergarh district of Haryana (India). *Journal of Medicinal Plants Research*, 7(18): 1263-1271.
32. Yadav, S.S., Bhandoria, M.S., Gulia, S.K., Raghav, T.B.S., Ganie S.A. and Neelam (2014). Floristic inventory of Dhosi hill region bordering Haryana and Rajasthan in India. *Plant Archives*, 14(2): 863-870.
33. Yavari, A. and Shahgolzari, S.M. (2010). Floristic study of Khan-Gormaz protected area in hamadan province, Iran. *International Journal of Agriculture and Biology*, 12: 271-275.
34. Webb, C.O., Slik, J.W.F. and Triono, T. (2010). Biodiversity inventory and informatics in Southeast Asia. *Biodiversity Conservation*, 19: 955-972.
35. Wheeler, Q.D. (2004). Taxonomic triage and the poverty of phylogeny. *Philosophical Transactions of the Royal Society of London. Series B*, 359 (1444): 571583.