# FLORISTIC COMPOSITION, BIOLOGICAL SPECTRUM AND PHENOLOGY OF TEHSIL HAVELIAN, DISTRICT ABBOTTABAD, KP, PAKISTAN

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### Abstract

Detailed field survey was carried out to assess the floristic composition, phenology, leaf and biological spectrum of Tehsil Havelian during 2011-2012. A total of 205 plant species belonging to 78 families were documented. According to plant habit there are 129 species of herbs, 38 species of trees and 38 species of shrubs. Asteraceae and Lamiaceae were dominant families with 15 species each, then Brassicaceae 11 species, Rosaceae and Papilionaceae with 10 species each. They were followed by Ranunculaceae with 9 species. All the remaining 72 families have less than 7 members. Flowering season was classified in two spells, first from March to July with 62.56% herbs, 19.48% shrubs, 18.46% trees, 2.56% grasses and 1.02% ferns. Second spell starts from August to November with 50% shrubs, 30% herbs and 20% trees. The life form classes were determined by the Raunkier's method which reveals that the most dominant life form was Therophytes with 89 species (43.68%), followed by Nanophanerophytes 26 species (12.62%), Megaphanerophytes 20 species (9.70%), Mesophanerophytes 19 species (9.22%), Chamaephytes 15 species (7.28%), Hemicryptophytes 15 species (7.28%), Geophytes 11 species (5.33%), Lianas 6 species (2.91%), Microphanerophytes 3 species (1.45%) and Neophytes with 1 species (0.48%). As for as leaf size concerned, Microphyll was the most prevalent leaf size with 98 species (47.80%), followed by Nanophyll 55 spp. (26.82%), Leptophyll 28 species (13.65%), Mesophyll 16 spp. (7.80%) and Megaphyll contributing with 8 species (3.90%). Study reflects the overall ecological scenario and may be beneficial as reference study for conservation and sustainable use of plants.

Key words: Floristic composition, Biological spectrum, Phenology, Havelian, Pakistan.

### Introduction

Havelian is Tehsil of District Abbottabad, Khyber Pakhtunkhwa lies in 34<sup>0</sup> 05' N latitude and 73<sup>0</sup> 16' E longitudes. It is located at 868 meter height above sea level. The area falls in subtropical humid zone with mild to warm temperature during April-May and September-October respectively; humid temperature in June-July, and cool to mild temperature during November-February. The temperature rises up to 35°C during the mid-summer months and drops below 0°C during winter months. The average mean monthly maximum and minimum temperature of the year are 24.66°C and 12.25°C respectively. The mean annual rainfall is 1,269 mm. Maximum rainfall occurs during July and August which is 247 mm and 244 mm respectively. This season is endowed with heavenly beauty that not only attracts tourists but also invite botanists for its unique flora. The total population of the area is 40,947.

The most useful and main source of botanical information of a particular area is its floristic checklists. Floristic composition is a good floristic marker, because any kind of changing floristic compositions in different endogenous milieu show the existence of different ecological factors; leads to interand intra-specific diversity (Safidkon *et al.*, 2003). Floristic study of any given area helps to evaluate the plant wealth and its potential values. The local plants identification and introduction of an area is very important to introduce the specific species of local area and their occurrence, growing seasons, finding new species and also the effect of climatic conditions like over-grazing, drought and temperature etc. on vegetation (Ali, 2008; Ahmad *et al.*, 2008).

Many workers have contributed comprehensive floristic checklists of local flora in different regions (Baig *et al.*, 1998; Qureshi & Bhatti, 2008; Abdullahi *et al.*, 2009; Jabeen *et al.*, 2009; Shaheen & Qureshi, 2011; Udayakumar *et al.*, 2011; Qin *et al.*, 2012; Youcef *et al.*, 2012).

Due to presence of diverse topographic features and microhabitats, the selected study area has a great potential for flourishing a rich plant biodiversity. The present study was planned with the objectives to investigate and document the floristic composition of the study area because the vegetation of the surrounding areas of cantonment was unexplored and never have been studied previously. It will be helpful for the conservation and sustainable utilization of plant resources of the area and also for further ecological investigations.

## **Materials and Methods**

The detailed field surveys have been conducted to document the floristic composition, phenology, leaf and biological spectrum of Tehsil Havelian, District Abbottabad, Khyber Pakhtunkhwa at regular intervals of different seasons of the year during 2011-2012. Three specimens of each plant species have been collected, dried and mounted on standard herbarium sheets. During the plant collection, local name, collection date, habit, habitat, flower color and phenological behavior of each plant species were recorded. The life form classes and leaf spectra of all plant species were determined and classified followed after Raunkiaer (1934) and Mueller-Dombois & Ellenberg (1974). The collected specimens were identified with the help of Flora of Pakistan (Nasir & Ali, 1971-94; Ali & Qaiser, 1995-2004). The voucher specimens were deposited in the Herbarium of Hazara University Mansehra, KP, Pakistan (Fig. 1).

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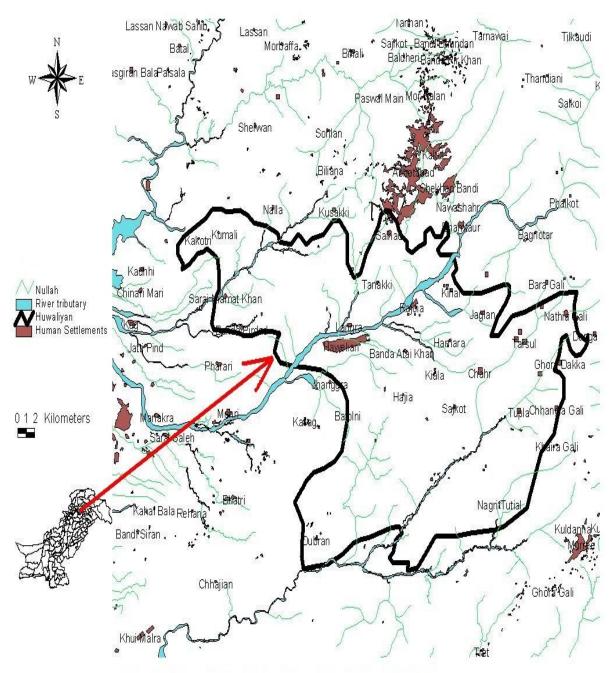


Fig. 1. Map of Tehsil Havelian, Abbottabad, Pakistan.

# Results

In present study, a total 205 plant species belonging to 164 genera and 78 families were recorded from study area. 197 plant species belong to angiosperms, 5 species belong to gymnosperms and 3 species belong to Pteridophytes (Fig. 2). Angiospermatophyta contains 75 families while 3 families are of Gymnosperms (Fig. 3).

According to plant habit there are 129 species of herbs, 38 species of trees and 38 species of shrubs (Fig. 4). Asteraceae and Lamiaceae were dominant families with 15 species each, then Brassicaceae 11 species, Rosaceae and Papilionaceae with 10 species each. They

were followed by Ranunculaceae with 9 species, Liliaceae 6, Poaceae, Polygonaceae and Plantaginaceae with 5 species each, Acanthaceae, Caryophyllaceae, Euphorbiaceae and Solanaceae with 4 species each. Apiaceae, Apocynaceae, Asclepidaceae, Caprifoliaceae, Malvaceae, Mimosaceae, Moraceae, Oleaceae and with 3 species Papaveraceae each. Alliaceae, Anacardiaceae, Boraginaceae, Campanulaceae, Cyperaceae, Fagaceae, Iridaceae, Lythraceae, Myrtaceae, Nyctaginaceae, Pinaceae, Pteridaceae, Salicaceae, Sapindaceae, Utricaceae and Verbinaceae had 2 species each. The remaining 40 Families had 1 species each (Table 1 & Fig. 5).

Violaceae Verbenaceae Valerianaceae Urticaceae



Fig. 2. Division of the plant species recorded from the study area.

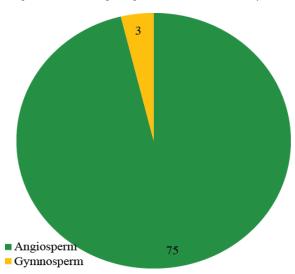


Fig. 3. Angiosperm and gymnosperm families of the plant species recorded from the study area.

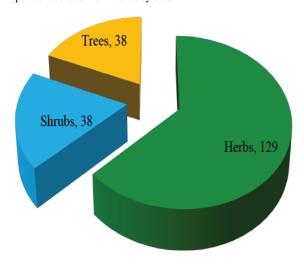


Fig. 4. Growth habit of the plant species recorded from the study area.

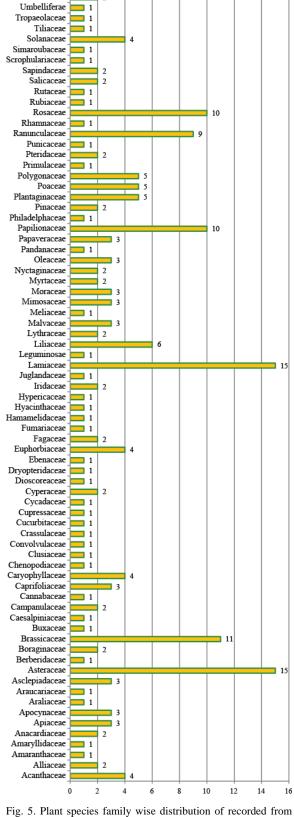


Fig. 5. Plant species family wise distribution of recorded from the study area.

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S. No.         Species         Family         Index         Life form         Life form         Protection         Protection           1. According and the control of the control		Table 1. List of plant species, biological spectrum and phenology of Tehsil Havelian, District Abbottabad, KP, Pakistan	ical spectrum and phenolo	gy of Tehs	il Havelian, D	strict Abbotta		
Family         habit         Life form         Leaf size         Flowering           modeled (Lam.) Willd.         Minnesseene         7         MP         L         Mattch-May           modeled (Lam.) Willd.         Minnesseene         5         Mesh         L         Mattch-May           modeled (Bern D.) Loss on Schult.         Amanchibaceae         H         TH         N         Spores produced Line-Augist           modeled (Bern D.) Loss on Schult.         Simmoubleceae         H         TH         N         Spores produced Line-Augist           modeled (Bern D.) Loss on Schult.         Simmoubleceae         H         TH         N         Spores produced Line-Augist           modeled (Bern D.) Loss on Schult.         Assence Produced Line-Augist         L         Mattch-Augist         Mattch-Augist           modeled (Bern D.) Loss on Schult.         Assence Produced Line-Augist         H         TH         N         Naturch-Augist           modeled (Bern D.) Loss on Schult.         Assence Produced Line-Augist         H         N         Naturch-Augist           modeled (Bern D.) Loss on Schult.         Assence Produced Line-Augist         H         N         Naturch-Augist           modeled (Bern D.) Loss on Schult.         Assence Produced Line-Augist         H         N         N				Plant	Life forn	classes	Phenology	
Accord condition will Mill.         Milliosecee         T         Mill Annosecee         Mill Milliosecee         Milliose	S. No	Species	Family	habit	Life form	Leaf size spectra	Flowering	Fruiting
Accessor of the control of the control of control of the	-	Acacia arabica (Lam.) Willd.	Mimosaceae	T	MP	Г	March-May	July
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Age of promised path.         Amounthace of the control of the c	4	Adiantum capillus-veneris L.	Pteridaceae	Η	TH	Z	Spores produced June-August	
According to the Cambes, Hook.         Supindecese         T         MP         Mis         May-Inne           Allanthus alterisation (Mill) Swingle         Simontodeces         T         MP         Mis         Match-April           Allanthus alterisation (Mill) Swingle         Lamineces         H         TH         Mis         Match-Lun           Allante registriol back-Ham.         Lamineces         H         TH         Mis         Match-Lun           Allante registriol back-Ham.         Lamineces         H         TH         Mis         Match-Lun           Allante registriol back-Ham.         Allante captural to the printed printed in the printed printed printed printed in the printed p	5.	Aerva javanica (Burm.f.) Juss. ex Schult.	Amaranthaceae	Η	СН	Z	Jan-Dec	Feb
Administration of the composition of the compos	9.	Aesculus indica (Wall ex Cambess.) Hook.	Sapindaceae	Η	MP	Mic	May-June	July-Aug
Asteracee	7.	Ailanthus altissima (Mill) Swingle	Simaroubaceae	⊢	MP	Mic	March-April	May-June
Algage investigation Bach-Ham.         Lamiseee         H         TH         N         Match-May           Alligate profiled Bach-Ham.         Lamiseee         H         TH         NI         March-May           Alligate profiled Bach. Lamine periodate IA. Bisch Cavana & Grande         Brassiscenee         H         TH         NI         April-May           Alliance striant.         Alliancee         H         T         NI         March-June           Anderboars contantifolial Hardw.         Primulaceae         H         H         N         May-Jun           Anderboars contantifolial Hardw.         Primulaceae         H         H         N         May-Jun           Anderboars contantifolial Hardw.         Primulaceae         H         H         N         May-Jun           Anderboars contantifolial Experiment of the Argorage of Brasilian Argorate Lamine (Lehn.) A.DC.         Brassicaceae         H         CH         L         May-Jun           Antifolial Experiment of the Argorage of Brasilian Argorate Lamine (Lehn.) A.DC.         Brassicaceae         H         CH         N         April-May           Antifolial Experiment of Brassicaceae         H         CH         N         April-May           Antifolial Experiment of Brassicaceae         H         CH         N	∞	Ainsliaea aptera DC.	Asteraceae	Η	TH	Mic	March-June	June-July
Aligneese Alliacese H TH Nic April-May         Illumiscate H TH Nic April-May         May-June Alliacese H TH Nic April-May         May-June Alliacese H TH Nic April-May         May-June Alliacese H TH Nic April-May         May-Jun March Alliacese H TH N N Nic April-May         May-Jun March Alliacese H TH N N Nic April-May         May-Jun March Alliacese H TH N N Nic April-May         May-Jun March Alliacese H TH N N Nic April-May         May-Jun March Alliacese H TH N N Nic April-May         March Alliacese H TH N N Nic April-May         March April-May         March April-May	9.	Ajuga integrifolia BuchHam.	Lamiaceae	Η	TH	Z	March-May	June-July
Affining periodae (MBieb) Cavara & Crande         Brassicaceae         H         TH         Mic         April-May           Affining expriodate (MBieb) Cavara & Crande         Affineace         H         G         Mic         March           Affining caper. It         Affining caper.         H         N         March         March           Activatione caper.         F         H         N         March         March           Activatione caper.         F         H         N         March         March           Activation caper.         F         H         N         March         March           Activation caper.         F         T         March         March         March           Activation caper.         F         T         March         Apprilate         Apprilat	10.	Ajuga parviflora Benth.	Lamiaceae	Η	TH	Z	May-June	June-July
Afflians export         Affliance export         Affliance export         Affliance export         Affliance export         Afflian export </td <td>Ξ.</td> <td>Alliaria petiolata (M.Bieb.) Cavara &amp; Grande</td> <td>Brassicaceae</td> <td>Η</td> <td>TH</td> <td>Mic</td> <td>April-May</td> <td>June-July</td>	Ξ.	Alliaria petiolata (M.Bieb.) Cavara & Grande	Brassicaceae	Η	TH	Mic	April-May	June-July
Allineare         H         G         Mic         March           Adunless savicular Edgew.         Frinalaecae         H         H         N         May-Jun           Adunless savicular Edgew.         Rannuculaecae         H         H         N         May-Jun           Aratesaciaceae         H         CH         L         May-Jun           Aratesaciaceae         H         CH         L         May-Jun           Aratesacia Inspelisariae (Lehm.) A.DC.         Brongimicaeae         H         CH         Mic         June           Aratesacia Inspelisariae (Lehm.) A.DC.         Brongimicaeae         H         CH         Mic         June           Aratesacia Inspelisariae (Lehm.) A.DC.         Brongimicaeae         H         CH         Mic         June           Arateraceae         Brongimicaeae         H         T         Mic         April-May           Asperragus officiadis L.         Ascalpiniaecae         T         MP         Mic         April-May           Barchia carista L.         Acanthaceae         T         MP         Mic         April-May           Barchia carista L.         Acanthaceae         T         MP         Mic         April-May           Bercharia dimdra L.	12.	Allium cepa L.	Alliaceae	Η	ŋ	Mic	June-July	August
And Posterial Fractors         Primulacene         H         N         May-Jun           Adultogistic publisher Wall, ex Royle         Rannuculaceae         H         H         N         May-Jun           Adultogistic publisher Wall, ex Royle         Brassicaceae         H         CH         L         May-Jun           Aratherish stepidiserin (Lehm.) A.D.C.         Brassicaceae         H         CH         N         Nach-Jun           Aratherish ispidiserin (Lehm.) A.D.C.         Brassicaceae         H         CH         N         Sept-Oct           Aratherish ispidiserin (Lehm.) A.D.C.         Brassicaceae         H         CH         N         Sept-Oct           Aratherish positive (Spidish (Spidish)         Brassicaceae         H         TH         N         July-Aug           Asplerimin dellousize (Spidish)         Assistanceae         H         TH         N         July-Aug           Barrieria (Spidish)         Assistanceae         H         TH         N         August           Barrieria (Spidish)         Assistanceae         H         TH         N         August           Barrieria (Spidish)         Assistanceae         H         TH         N         August           Brownie sectorum L.         Brownie sectorum L. </td <td>13.</td> <td>Allium sativum L.</td> <td>Alliaceae</td> <td>Η</td> <td>Ö</td> <td>Mic</td> <td>March</td> <td>April-May</td>	13.	Allium sativum L.	Alliaceae	Η	Ö	Mic	March	April-May
Aquilegia publifora Wall. ex Royle         Rannuculateae         H         N         May-Jun           Aratucarizete         H         CH         N         May-Jun           Aratucarizete         H         CH         L         May-June           Aratucarizete         H         CH         Mis         June           Arabidopsis valifedii (Hook. f.e. Thomson) N. Basch         Brassicaceae         H         CH         N         Sept-Oct           Asparagus officialist.         Asparagus officialist.         Asclepiadaceae         H         CH         N         Sept-Oct           Asparagus officialist.         Asclepiadaceae         H         CH         N         Sept-Oct           Asparagus officialist.         Asclepiadaceae         H         TH         N         July-Aug           Brainit varegate L         Berberis (viewneck         S         H         N         July-Aug           Bruiniti varegate L         Berberis (viewneck         S         N         N         Aug-Oct           Berbiniti varegate L         Berberis (viewneck         S         N         N         Aug-Oct           Berbiniti varegate L         Berberis (viewneck         N         N         N         Aug-Oct	14.	Androsace rotundifolia Hardw.	Primulaceae	Η	Н	Z	May-Jun	July-Aug
Arabitos saricola Edgew.         Anach-Amb         Brassicaceae         H         CH         L         May-June           Arabidopsis valitorii (Hook, f. & Thomson) N. Busch         Brassicaceae         H         CH         Mic         June           Arabidopsis valitorii (Hook, f. & Thomson) N. Busch         Brassicaceae         H         CH         Mic         June           Asplenimi dallousiace Hook.         Asplenimaceae         H         CH         N         SepCot           Asplenim dallousiace Hook.         Asclepiadaceae         H         TH         N         June-July           Asplenim dallousiace Hook.         Asclepiadaceae         S         H         Mic         June-July           Berberia cyclium L.         Asclepiadaceae         S         N         Mic         June-July           Brown secolium L.         Brown secolium L.         P         Mes         August           Brown secolium L	15.	Aquilegia pubiflora Wall. ex Royle	Ranunculaceae	Н	Η	Z	May-Jun	July-Aug
Annearia sp.         Anneariaceae         T         Mp         Mag         Anarcharda sp.           Arabidopsis willicking (Lehm.) A.D.C.         Anneabia höppilisasinae (Lehm.) A.D.C.         Barsiscaceae         H         TH         L         June         Jun	16.	Arabis saxicola Edgew.	Brassicaceae	Η	СН	Γ	May-June	July-Aug
Amerbajatissyme (Lehm.) A.D.C.         Beraginaceae         H         TH         L         March-April           Arabidapsis valifedii (Hook. f. & Thomson) N. Busch         Berasicaeeae         H         CH         Nic         June           Asparagus affeitualis L.         Asteraceae         H         TH         N         April-May           Barbinia variegaa L.         Asteridaceae         T         MP         Nes         April-May           Berberis freium Royle         Browns         Ny caginaceae         S         Ch         N         August           Bongainvillea sp.         Ny caginaceae         S         Ch         N         August           Browns recedinas L.         Poaceae         H         TH         N         August           Browns recedinas L.         Poaceae         H         TH         N         August           Browns recedinas L.         Argipinaceae         T	17.	Araucaria sp.	Araucariaceae	Η	MP	Mag		
Arthibidapsis wallifothii (Hook, f. & Thomson) N. Busch Asseraceae H CH Nic June Artmisia sp. Aspleraceae H CH N Sept-Oct Artmisia sp. Aspleraceae H CH N July-Aug Barleira cristata L. Liliaceae T MP Nic July-Aug Barleira cristata L. Caesalpiniaceae T MP Nic June-Luly Berberidaceae T MP Nic June-Luly Berberidaceae S NP Nic Mic June-Luly Berberidaceae S NP Nic June Berberidaceae S Ch N August August Brousis caeraic felumbea L. Poaceae H TH Nes March-April Brouns rectorum L. Brouses cedinus L. Myctaginaceae H TH Nic Angust March-April Poaceae H TH Nic April-May Calitacean Critical Activity Dyand. Campanulaceae H CH L Nics June-Cut Campanulaceae H CH L Nics June-Cut Campanulaceae H CH L Nics June-Cut Campanulaceae H CH L Nics Nic April-May Campolis seeboldii (Schindl.) Schindl. Papilionaceae S Nic May-June Campolis seeboldii (Schindl.) Schindl. Papilionaceae H TH Mic April-May Campolis seeboldii (Schindl.) Schindl. Papilionaceae H TH Mic April-May Campolis servica Trevit: ex Spreng Carropolyllaceae H TH Mic April-May-June Carropolium album L. L May-June Cheropodium album L. L May-June Cheropodium album L. L Nicologiaeae H TH Nic Nicologiaeae H TH Nicologiaeaeae H TH Nicologiaeaeae H TH Nicologiaeaeaeaea	18.	Arnebia hispidissima (Lehm.) A.DC.	Boraginaceae	Η	TH	Γ	March-April	May-June
Asteraceae         H         CH         N         Sep-Oct           Asparagus officialist L.         Asteraceae         H         G         L         April-May           Asparagus officialist L.         Liliaceae         H         Mic         Lunk-July           Barleria cristata L.         Caesalpiniaceae         T         M         Mic         June-July           Barleria fectural Royle         Berberidaceae         S         N         Mic         April-May           Bordinal variegate L.         Berberidaceae         S         N         Mic         April-May           Bordinal variegate L.         Berberidaceae         S         N         Mic         April-May           Bordinal variegate L.         Berberidaceae         S         N         Mic         April-May           Bordinal damata L.         May-June         August         April-May         April-May           Browns variedilus L.         Poaceae         H         TH         Mic         April-May           Browns variedulus calinate (ampril pollide Wall         April-May         May-June         April-May-June         April-May-June           Campsunda pollide Wall         Campsundaceae         H         TH         Mic         April-May-June <td>19.</td> <td>Arabidopsis wallichii (Hook. f. &amp; Thomson) N. Busch</td> <td>Brassicaceae</td> <td>Η</td> <td>СН</td> <td>Mic</td> <td>June</td> <td>July</td>	19.	Arabidopsis wallichii (Hook. f. & Thomson) N. Busch	Brassicaceae	Η	СН	Mic	June	July
Asparagus officinalis L.         Asparagus officinalis L.         Liliaceae         H         G         L         April-May           Asperiation definance Hook.         Asperiadeaceae         H         TH         N         July-Aug           Barberia defination definance L.         Acambaceae         T         MP         Mes         April-May           Berberia dender L.         Recheridaceae         S         Ch         N         April-May           Boerberia dionder L.         Nyctaginaceae         S         Ch         N         Aug-Oct           Boerberia dionder L.         Nyctaginaceae         T         MP         Mic         Aug-Oct           Brown and composition Secolation Secolation Componint Composition Composition Composition Componint Composition	20.	Artimisia sp.	Asteraceae	Η	СН	Z	Sept-Oct	Nov-Dec
Asclepiadaceae         H         TH         N         July-Aug           Barberia verstaat L.         Asclepiadaceae         S         H         Mic         June-July           Barberia verstaat L.         Caesalpiniaceae         S         N         Mic         June-July           Barberia verstaat L.         Berberidaceae         S         Ch         N         Aug-Oct           Boerhavia diandra L.         Nyctaginaceae         S         Ch         N         Aug-Oct           Broustie sectorium L.         Brossica campestris L.         Poaceae         H         TH         Ms         Aug-Oct           Brounts sectorium L.         Poaceae         H         TH         N         Aug-Lhri Ang-Lhri Ang-Lhri Ang-Lhri         May-June           Brounts sectorium L.         Callistemon citriants (Cutris) Skeels         Mft         Mic         April-May           Brounts sectorium L.         Callistemon citriants (Cutris) Skeels         Mft         Mic         April-May           Callistemon citriants (Cutris) Skeels         Mft         Mic         April-May           Callistemon citriants (Cutris) Skeels         Mft         Mic         April-May           Callistemon citriants (Cutris) Skeels         Mft         Mc         Mine-July	21.	Asparagus officinalis L.	Liliaceae	Η	Ö	Γ	April-May	June-July
Barberia cristaa L.         Acanthaceae         S         H         Mic         June-July           Barberia barberia castegaa L.         Barberia dianta variegaa L.         Ang-June         June         June           Barberia dianta Noyle         Barberia dianta L.         Ny ctaginaceae         T         NP         Mic         Ang-Lat           Boerhavia dianta L.         Brassicaceae         T         MP         Mic         August           Brassica cumpestria L.         Brassicaceae         T         MP         Mic         August           Brassica cumpestria L.         Brassicaceae         H         TH         Me         August           Brassica cumpestria L.         Poaceae         H         TH         Me         April-May           Brassica cumpestria L.         Paraceae         H         TH         Mic         April-May           Bronns secolina L.         Asclepiadaceae         T         MesP         Mic         April-May           Calistemon cirriaus (Curis) Skeels         My raceae         T         MesP         Mic         April-May           Calistemon cirriaus (Curis) Skeels         My raceae         T         MesP         Mic         May-June           Campanda Cashmeriau Royle         Campanda Ca	22.	Asplenium dalhousiae Hook.	Asclepiadaceae	Η	TH	Z	July-Aug	Sept.
Banthinia variegaa L.         Caesalpiniaceae         T         MP         Mes         April-May           Berberis fycium Royle         Berberis fycium Royle         Nyctaginaceae         S         Ch         N         Aug-Oct           Boerbaris fycium Royle         Myctaginaceae         T         MP         Mic         Aug-Oct           Bougain will ach	23.	Barleria cristata L.	Acanthaceae	S	Η	Mic	June-July	August
Berberis betime Royle         Berberidaceae         S         NP         Mic         June           Boerbaria diandra L.         Boerbaria diandra L.         Nyctaginaceae         T         NP         Mic         August           Boegian calleaceae         T         MP         MF         August         August           Browns secalinus L.         Browns secalinus L.         Poaceae         H         TH         N         May-June           Bromus secalinus L.         Poaceae         H         TH         N         May-June           Galistenon cirrinus (Curis) Skeels         My raaceae         T         Mes         May-June           Callistenon cirrinus (Curis) Skeels         Mic         Mpy-June         Oct           Callistenon cirrinus (Curis) Skeels         Mic         May-June         Oct           Callistenon cirrinus (Curis) Skeels         Mic         May-June         Oct           Callistenon cirrinus (Curis) Skeels         Mic         Mic         June-July           Campanula coshmerican Royle         Campanula coshmerican Royle         Campanula coshmerican Royle         Campanula coshmerican Royle         May-June         Campanula Curis         N         June-July           Campanula bursacum L.         Cercustima domertostum L.         R	24.	Bauhinia variegata L.	Caesalpiniaceae	Η	MP	Mes	April-May	June-July
Boerhavia diandra L.         Nyctaginaceae         S         Ch         N         Aug-Oct           Brassica campestris L.         Brassica campestris L.         Brassica campestris L.         Angust         Angust           Browns seconiums L.         Browns seconiums L.         Poaceae         H         TH         Mes         March-April           Browns seconium L.         Poaceae         H         TH         Mic         April-May           Callistemon citriums (Curtis) Skeels         Myrtaceae         T         Mes         June April-May           Callistemon citriums (Curtis) Skeels         Asclepiadaceae         S         MP         May-June           Callistemon citriums (Curtis) Skeels         Asclepiadaceae         S         MP         May-June           Callistemon citriums (Curtis) Skeels         Asclepiadaceae         S         MP         May-June           Campanula cashmeriana Royle         Campanulaceae         H         TH         May-June           Campanula cashmeriana Royle         Campanulaceae         H         TH         Mic         April-May           Campanula cashmeriana Royle         Campanulaceae         H         TH         Mic         April-May           Campanula cashmeriana Royle         Campanulaceae         H	25.	Berberis lycium Royle	Berberidaceae	S	ΝP	Mic	June	July
Bougainvillea sp.         Nyctaginaceae         T         Mic         August           Brassica campestris L.         Brassicaceae         H         TH         Mes         March-April           Bromus secdinus L.         Bromus eccdinus L.         Poaceae         H         TH         N         May-lune           Bromus tectorum L.         Bromus tectorum L.         Poaceae         H         TH         May-lune           Calistemon citrinus (Curtis) Skeels         Myrtaceae         T         MesP         Mic         April-May           Calotropis procera (Aiton) Dryand.         Casheliadeaea         S         MP         Mes         June-July           Campanda cashmeriana Royle         Campanulaceae         H         CH         L         June-July           Campanula cashmeriana Royle         Campanulaceae         H         CH         L         Juny-June           Campanula cashmeriana Royle         Campanulaceae         H         CH         L         July-Sept           Campanula cashmereboldii (Schindl.) Schindl.         Schindl.         Campanulaceae         H         TH         Mic         April-May-June           Cansabaceae         H         TH         Mic         May-June         Cerastium glomeratum Thuill.         Caryle M	26.	Boerhavia diandra L.	Nyctaginaceae	S	C	Z	Aug-Oct	Sept-Nov
Brassicaceae         H         TH         Mes         March-April           Bromus secalinus L.         Bromus secalinus L.         Nay-June         April-May           Bromus secalinus L.         Bromus well         Myrtaceae         H         TH         Mic         April-May           Callistenno citrinus (Curis) Skeels         Asclepiadaceae         S         MP         May-June         May-June           Calotropis procera (Aiton) Dyand.         Campanula ceashneriana Royle         Campanula ceashneriana Royle         L         June-July           Campanula cashneriana Royle         Campanula ceashneriana Royle         Campanula ceashneriana Royle         L         June-July           Campanula cashneriana Royle         Campanula ceashneriana Royle         L         L         July-Sept           Campanula cashneriana Royle         Campanula ceashneriana Royle         R         L         L         July-Sept           Campanula cashneriana Royle         Campanula cease         S         NP         N         July-Sept           Canadas cariana gerica Trevir: ex Spreng.         Caryophyllaceae         H         TH         May-June           Cerastium glomeratum Thuill.         Caryophyllaceae         H         TH         N         June-July           Chenopodium album L.	27.	Bougainvillea sp.	Nyctaginaceae	Ε	MP	Mic	August	Sept.
Bromus secalinus L.         Poaceae         H         TH         N         May-June           Bromus tectorum L.         Poaceae         H         TH         Mic         April-May           Callistemon citrinus (Curtis) Skeels         Myrtaceae         T         MesP         Mic         May-June           Callistemon citrinus (Curtis) Skeels         Myrtaceae         T         MesP         Mic         May-June           Campanula cashmericana Royle         Campanula cashmericana Royle         Campanula cashmericana Royle         L         L         June-July           Campanula cashmericana Royle         Campanula cashmericana Royle         Campanula cashmericana Royle         L         L         May-June           Campanula pallida Wall.         Campanula cashmericana Royle         L         L         May-June           Cannabis sativa L.         Medic.         Brassicaceae         H         TH         Mic         April-May           Capsella bursa-pastoris (L.) Medic.         Spreng.         Cannabaceae         H         TH         Mic         April-May-June           Certastium glomeratum Thuill.         Caryophyllaceae         H         TH         May-June           Cercastium tomentostum L.         Chenopodium album L.         TH         TH         May	28.	Brassica campestris L.	Brassicaceae	Η	TH	Mes	March-April	May-June
Bromus tectorum L.         Poaceae         H         TH         Mic         April-May           Callistemon citrinus (Curtis) Skeels         Asclepiadaceae         T         Mes         June-June           Callistemon citrinus (Curtis) Skeels         Asclepiadaceae         S         MP         Mes         June-Oct           Campanula cashmeriana Royle         Campanulaceae         H         CH         L         June-July           Campanula pallida Wall.         Campanulaceae         H         CH         L         May-June           Campanula pallida Wall.         Campanulaceae         H         CH         L         May-June           Campalotropis meeboldii (Schindl.) Schindl.         Campanulaceae         H         TH         Mic         April-May-June           Cannabascaelu bursa-pastoris (L.) Medic.         Asteraceae         H         TH         Mic         April-May-June           Certastium glomeratum Thuill.         Certastium glomeratum Thuill.         Caryophyllaceae         H         TH         Mic         April           Cercastium tonentosum L.         Chenopodium album L.         TH         N         June-July	29.	Bromus secalinus L.	Poaceae	Η	TH	Z	May-June	July
Callistemon citrinus (Curtis) Skeels       Myrtaceae       T       Mes       Mic       May-June         Calotropis procera (Aiton) Dryand.       Campanulaceae       S       MP       Mes       June-Oct         Campanula cashmeriana Royle       Campanulaceae       H       CH       L       June-July         Campanula pallida Wall.       Campanulaceae       H       CH       L       May-June         Campanula pallida Wall.       Campanulaceae       H       TH       Mic       May-June         Campalotropis meeboldii (Schindl.) Schindl.       Campanulaceae       H       TH       Mic       May-June         Cannabascaelu bursa-pastoris (L.) Medic.       Asteraceae       H       TH       Mic       April-May         Centaurea iberica Trevir. ex Spreng.       Centaurea iberica Trevir. ex Spreng.       Caryophyllaceae       H       TH       Mic       April-         Cerastium glomeratum Thuill.       Cerastium tomentosum L.       Chenopodiaceae       H       TH       N       June-July     Chenopodiaun album L.  TH     TH     N     June-July	30.	Bromus tectorum L.	Poaceae	Η	TH	Mic	April-May	June-July
Campanula cashmeriana Royle       Asclepiadaceae       S       MP       Mes       June-Oct         Campanula cashmeriana Royle       Campanulaceae       H       CH       L       June-July         Campanula pallida Wall.       Campanulaceae       H       CH       L       May-June         Campalotropis meeboldii (Schindl.) Schindl.       Campanulaceae       H       TH       Mic       May-June         Cannabascae       H       TH       Mic       April-May         Capsella bursa-pastoris (L.) Medic.       Asteraceae       H       TH       Mic       April-May         Certaareet iberica Trevit: ex Spreng.       Certastium glomeratum Thuill.       Caryophyllaceae       H       TH       Mic       April         Cerastium tonentosum L.       Chenopodium album L.       TH       N       June-July	31.	Callistemon citrinus (Curtis) Skeels	Myrtaceae	Τ	MesP	Mic	May-June	July
Campanulaceae H CH L June-July Campanulaceae H CH L May-June Campanulaceae H CH L May-June Campanulaceae H CH L May-June Campanulaceae H TH Mic May-June Cannabis sativa L. Cannabaceae H TH Mic April Canyophylaceae H TH Mic April Canyophylaceae H TH L. Chenopodium album L. Chenopo	32.	Calotropis procera (Aiton) Dryand.	Asclepiadaceae	S	MP	Mes	June-Oct	Sept-Nov
Campanulaceae H CH L May-June Campanulaceae S NP N July-Sept Cannabis sativa L. Cannabis	33.	Campanula cashmeriana Royle	Campanulaceae	Η	СН	Γ	June-July	August
Canapis meeboldii (Schindl.) Schindl. Canabaceae H TH Mic April-May. Canadis scativa L. Medic. Brassicaceae H TH Mic April-May Asteraceae H CH Mes May-lune Cercastium glomeratum Thuill. Caryophyllaceae H TH Mic April Caryophyllaceae H TH L May-lune Cercastium tomentosum L. Chenopodiaceae H TH N June-July	34.	Campamula pallida Wall.	Campanulaceae	Н	CH	Γ	May-June	July
Cannabis sativa L.       Cannabaceae       H       TH       Mic       May-June         Capsella bursa-pastoris (L.) Medic.       Brassicaceae       H       TH       Mic       April-May         Centaurea iberica Trevir. ex Spreng.       Asteraceae       H       CH       Mes       May-lune         Cerastium glomeratum Thuill.       Caryophyllaceae       H       TH       Mic       April         Cerastium tonnentosum L.       Chenopodiaun album L.       TH       N       June-July	35.	Campylotropis meeboldii (Schindl.) Schindl.	Papilionaceae	S	ď	Z	July-Sept	Aug-Oct
Capsella bursa-pastoris (L.) Medic.       Brassicaceae       H       TH       Mic       April-May         Centaurea iberica Trevir. ex Spreng.       Asteraceae       H       CH       Mes       May-June         Cerastium glomeratum Thuill.       Caryophyllaceae       H       TH       Mic       April         Cerastium tomentosum L.       Chenopodium album L.       Chenopodiaceae       H       TH       N       June-July	36.	Cannabis sativa L.	Cannabaceae	Η	TH	Mic	May-June	July
Centaurea iberica Trevir. ex Spreng.  Cerastium glomeratum Thuill.  Cerastium tonnentosum L.  Chenopodium album L.  Chenopodiaceae H TH Mic April Caryophyllaceae H TH L May-lune Chenopodiaceae H TH N June-July	37.	Capsella bursa-pastoris (L.) Medic.	Brassicaceae	Η	TH	Mic	April-May	Jun-July
. Cerastium glomeratum Thuill. Caryophyllaceae H TH Mic April . Cerastium tomentosum L. Chenopodiaceae H TH L May-June . Chenopodium album L. Chenopodiaceae H TH N June-July	38.	Centaurea iberica Trevir. ex Spreng.	Asteraceae	Η	СН	Mes	May-June	July
. Cerastium tomentosum L. Caryophyllaceae H TH L May-June Chenopodiaceae H TH N June-July	39.	Cerastium glomeratum Thuill.	Caryophyllaceae	Н	TH	Mic	April	May-June
. Chenopodium album L. Chenopodiaceae H TH N June-July	40.	Cerastium tomentosum L.	Caryophyllaceae	Η	TH	Γ	May-June	July
	41.	Chenopodium album L.	Chenopodiaceae	н	TH	z	June-July	August

<u>.</u>		:	,	I ifo form oloccoe			
S. No. Species  42. Cirsium vul 43. Clematis gr 44. Clematis p 46. Colebrooke 47. Convolvulu 48. Conza jap 49. Conza sp 50. Corims cog 51. Cotims cog 52. Crambe con 53. Crucihinal 54. Cycus sp. 55. Cynodon d 56. Cyperus alt 56. Cyperus alt 57. Cyperus alt 58. Dalbergia s 59. Datura albe 60. Desmodium 61. Debregeasi 62. Deutzia sta 63. Diciliptera b 64. Diosocea e 65. Diosocea e 66. Desmodium 61. Debregeasi 62. Deutzia sta 63. Diciliptera b 64. Diosocea e 65. Diosocea e 66. Diosocea e 66. Diosocea e 67. Diosocea e 66. Diosocea e			- Bant	THE IOLI	ı classes	Phenology	
		Family	habit	Life form	Leaf size spectra	Flowering	Fruiting
	Cirsium vulgare (Savi) Ten.	Asteraceae	H	HI	Mic	April	May-June
	nta Wall.	Ranunculaceae	Τ	Γ	Z	July-Aug	Sept-Oct
	Clematis montana BushHam. ex DC.	Ranunculaceae	S	Γ	Mic	May-June	July
		Ranunculaceae	Η	Γ	Z	May	June-July
	Colebrookea oppositifolia Sm.	Lamiaceae	Τ	MP	Mes	April	May-June
	Convolvulus arvensis L.	Convolvulaceae	Η	Ð	Z	March-April	May-June
	Conyza japonica (Thunb.) Less. ex Less.	Asteraceae	Η	HI	Г	Sept	Oct
		Asteraceae	Η	HI	Mic	July-Sept	Sept-Oct
	Coriandrum sativum L.	Apiaceae	Η	HI	Г	April-May	June-July
	Cotinus coggygria Scop.	Anacardiaceae	Η	HI	Mic	June	July
	Crambe cordifolia Steven	Brassicaceae	Η	HI	Mic	March-April	May-June
	Crucihimalaya himalaica (Edgew.) Al-Shehbaz, O'Kane & R.A. Price.	Brassicaceae	Η	HI	Mic	March-April	May-June
		Cycadaceae	S	MP	Mes		
	ctylon L.	Poaceae	Η	ŋ	Г	Throughout the year except December	
	Cyperus alternifolius L.	Cyperaceae	Η	Н	Z	April-May	June-July
	mdus L.	Cyperaceae	Η	Η	Z	May	June-July
	isoo DC.	Papilionaceae	Τ	MP	Mic	May-June	July-Aug
	L.	Solanaceae	Η	TH	Mes	June-July	August
	Desmodium elegans DC.	Papilionaceae	S	ď	Z	July-Aug	Sept-Oct
	Debregeasia saeneb (Forssk.) Hepper & J.R.I. Wood	Urticaceae	S	ΔN	Z	April-May	June-July
	Deutzia staminea R.Br. ex Wall.	Philadelphaceae	S	ď	Z	April-May	June-July
	Dicliptera bupleuroides Nees	Acanthaceae	Η	ΗH	Z	June-Oct	Sept-Oct
	Dioscorea deltoidea Wall. ex Griseb.	Dioscoreaceae	Η	Г	Mic	June-July	August
oo. Diospyros totas L.	otus L.	Ebenaceae	Т	MP	Mic	Sept-Oct	November
	Dodonaea viscosa (L.) Jacq.	Sapindaceae	S	å	Mic	April-May	June-July
	Dryopteris wallichiana (Spreng.) Hyl.	Dryopteridaceae	Η	Н	Mag	May-June.	July-Aug
<ol><li>Eleocharis sp.</li></ol>	р.	Poaceae	Η	HI	Z	May-June	July-Aug
<ol><li>Eruca sativa L.</li></ol>	i.	Brassicaceae	Η	ΗH	Mic	April-May	June-July
<ol><li>Eucalyptus</li></ol>	Eucalyptus globulus Labill.	My rtaceae	Т	MP	Mic	Sept-Oct	Nov-Dec
71. Euphorbia	Euphorbia helioscopia L.	Euphorbiaceae	Η	MP	Mic	Aug-Sept	Oct-Nov
,	Euphorbia wallichii Hook.f	Euphorbiaceae	Η	TH	Z	Aug-Sept	Oct-Nov
<ol><li>Ficus carica L.</li></ol>	Ţ.	Moraceae	Ξ	HI	Z	Apr-May	June-July
74. Foenum graecum L.	ecum L.	Papilionaceae	Η	MP	Mic	April	July
75. Foeniculum	Foeniculum vulgare Mill.	Apiaceae	Η	TH	Mic	April-May	June-July
76. Fragaria m	Fragaria nubicola (Lindl. ex. Hook. f) Lacaita	Rosaceae	Η	TH	Mic	May-June	July
77. Fumaria im	Fumaria indica (Hausskn.) Pugsley	Fumariaceae	Η	TH	Z	May-June	July
-	Gagea reticulata (Pall.) Schult. & Schult.f.	Liliaceae	Η	СН	Mic	March-April	May-June
<ol><li>Galinsoga I</li></ol>	Galinsoga parviflora Cav.	Fumariaceae	Η	HI	Г	June-July	August
	rine L.	Rubiaceae	Η	HI	Mic	May-June	July
	Gerbera gossypina (Royle) Beauverd	Asteraceae	Ξ	Ξį	<b>」</b> ,	March-April	May-June
82. Grewia opt	<i>Grewia optiva</i> J.K. Drumm. ex Burret	Liliaceae	-	H	7	Feb-March	April-May

		Table 1. (Cont'd.).	nt'd.).		,		
			Plant	Life form classes	classes	Phenology	
S. No.	S. No. Species	Family	habit	Life form	Leaf size spectra	Flowering	Fruiting
83.	Hieracium Umbella Nagila & Peter	Asteraceae	H	MP	Mic	March-April	May-June
84.	Himalaiella heteromalla (D.Don) Raab-Straube.	Asteraceae	Н	Н	Mic	March-April	May-Sept
85.	Hedera nepalensis K. Koch	Araliaceae	Η	TH	Z	April-Aug	June-Sept
86.	Hypericum perforatum subsp. Songaricum (Ledeb. ex Rchb.) N. Robson	Hypericaceae	S	Г	Mic	June-Aug	Sept
87.	Ipomoea eriocarpa R. Br	Clusiaceae	Η	Ö	Z	Sept-Oct	Nov-Dec
88.	Iris reichenbachii Heuff.	Iridaceae	Η	TH	Mic	April-May	June-July
.68	Iris sanguinea L.	Iridaceae	Η	Ü	Mag	April-May	June-July
90.	Isodon rugosus (Wall. ex Benth.) Codd	Lamiaceae	S	Ö	Mag	July-Sept	Oct-Nov
91.	Jasminum humile L.	Oleaceae	S	Ν	Z	Aug	Sept
92.	Jasminum officinale L.	Oleaceae	S	ΝΡ	Mic	April-May	Jun-Aug
93.	Juglans regia L.	Juglandaceae	Τ	ΝP	Mic	July	August
94.	Justicia adhatoda L.	Acanthaceae	S	MP	Mag	March-April	May-June
95.	Lagerstroemia indica L.	Lythraceae	Т	NP	Mic	June-July	August
96	Lamium amplexicaule L.	Lamiaceae	Н	ď	Mic	March-April	May-June
97.	<i>Lathyrus aphaca</i> L.	Papilionaceae	Н	TH	Z	Aug-Sept	Oct-Nov
98.	Lathyrus odorata L.	Papilionaceae	Н	TH	Mic	April	May-June
.66	Lathyrus sativus L.	Papilionaceae	Η	TH	Γ	June-July	August
100.	Lonicera quinquelocularis Hard.	Caprifoliaceae	S	TH	Z	May-June	July-Aug
101.	Lotus garcini Ser.	Papilionaceae	Η	MicP	Mic	March-April	May-June
102.	Luffa cylindrica (L.) M.Roem.	Cucurbitaceae	Η	Н	Γ	April-May	June-July
103.	Lythrum salicaria L.	Lythraceae	Η	Γ	Mag	Jan-March	April-May
104	Mallotus philippensis (Lam.) Müll.Arg.	Euphorbiaceae	S	Ü	Mic	June-July	August
105.	Malva nicaeensis All.	Malvaceae	Η	NP	Mic	May	June-July
106.	Malva parviflora L.	Malvaceae	Н	TH	Mic	May	June-July
107.	Malvastrum coromandelianum (L.) Garcke	Malvaceae	Н	TH	Mic	May-June	July
108.	Medicago polymorpha L.	Leguminosae	Η	Н	Z	March-April	June-July
109.	Melia azedarach L.	Meliaceae	Т	HI	Z	April	May
110.	Mentha arvensis L.	Lamiaceae	Η	MP	Mic	July-Sept	Aug-Oct
=======================================	Mentha longifolia (L.) L.	Lamiaceae	Η	Н	Mic	July-Sept	Oct-Nov
112.	Micromeria biflora (BuchHam. ex D. Don) Benth.	Lamiaceae	Η	Η	Mic	Feb-March	April-May
113.	Morus alba L.	Moraceae	Т	СН	Г	April-May	June-July
114.	Morus nigra L.	Moraceae	Τ	MP	Mes	April-May	June
115.	Narcissus tazetta L.	Amaryllidaceae	Н	MP	Mes	Jan-Oct, Nov-Dec	March-Jan
116.	Nastium officinale L.	Tropaeolaceae	Η	Ü	Mic	April-May	June-July
117.	Nasturtium officinale R.Br.	Brassicaceae	Н	TH	Mic	April-May	June-July
118.	Nepeta raphanorhiza Benth.	Lamiaceae	Η	TH	Γ	March-April	May-June
119.	Nepeta graciliflora Benth.	Lamiaceae	Н	HI	Г	May-June	July-Aug
120.	Nepeta tuberosa L.	Lamiaceae	Н	TH	Mic	June-Aug	July-Sept
121.	Nerium indicum Mill.	Apocynaceae	S	ď	Mic	May-June	July-Aug
122.	Nerium oleander L.	Apocynaceae	S	NP	Mic	March-Oct	April-Nov
123.	Notholirion thomsonianum (Royle) Stapf	Liliaceae	H	TH	Mic	March-April	May-June

S. No.         Species         Family         Plant         Life form         Applicable			Table 1. (Cont'd.).	nt'd.).		,		
Family         habit         Life form         Life form         Life form           registers Will ex Alich, and condered to conderige (Forsk), Kunzee         Poldeneue         7         Mp         Michael           reading of Michael (Forsk), Kunzee         Polyaverneeue         H         TH         Michael           reading form         Polyaverneeue         H         TH         Michael           reading form         Polyaverneeue         H         TH         Michael           reading form         Asteneuee         H         TH         Michael           nut historyphorus L.         Asteneuee         H         TH         Michael           nut historyphorus L.         Asteneuee         H         TH         Michael           nut historyphorus L.         Asteneuee         H         TH         Michael           nut of policity been decided to the policity of the				Plant	Life forn	classes	Phenology	
Very developed Valle, et Alach, Potescene 1 Meb Mag Pandanacene 5 Mich Pandanacene 5 Mich Pandanacene 1 Mich Papaver Professer, Kunze Papaver Professer, L. Physicaster. 1 Physicaster. 1 Physicaster. 1 Physicaster. 1 Physicaster. 2 Physicaster. 3 Ph L Parchingology Experimental Octaver, Might Papaver, M	S. No	Species	Family	habit	Life form	Leaf size spectra	Flowering	Fruiting
Pandanesee S Mich Punkan Pandanesee S Mich Mag Pandanesee H TH Mic Pandanesee H TH Mic Pandanesee H TH Mic Papaverseene H TH Mic Parabitation Stocknown Casteria or evertal L Speach Papaverseene H TH Mic Parabitation Stocknown Casteria or evertal L Speach Papaverseene H TH Mic Papaverseene L Search L Papaverseene H TH Mic Papaverseene L Papaverseene L MP Mic Papaverseene L Papaverseene L MP Mic Papaverseene L Papaverseene L MP Mic Papaverseene L Mic Papav	124.	Olea ferruginea Wall. ex Aitch.	Oleaceae	⊢	MP	Mic	April-May	June-July
Papaveracene H TH Mic	125.	Pandamus odorifer (Forssk.) Kuntze	Pandanaceae	S	MicP	Mag	May-June	June-July
Papaveraceae H TH Mic Papaveraceae H TH Mic Papaveraceae H TH Mic Papaveraceae H TH Mic Papaveraceae S MP Mic Paroxiopasis (sequenonitian (Decne.) Rehder Harmelidaceae S MP Net Decrei Papaveraceae H TH Mic Papaveraceaeae H TH Mic Papaveraceaeaeaeaeaeaeaeaeaeaeaeaeaeaeaeaeaea	126.	Papaver midicaule L.	Papaveraceae	Η	TH	Mic	June-Aug	Sept-Oct
Papares somificante U. Behder Hammelidecene S MP Mic Parantegaris jacquemontant (Decre, Rehder Hammelidecene S MP Mic Parantegaris jacquemontant (Decre, Rehder Hammelidecene S MP L Asteraceae H TH Mic Perskeria neyalearis (L.) Stach Myabe Polygonaceae H TH Mic Perskeria neyalearis (L.) Stach Myabe Polygonaceae H TH Mic Perskeria neyalearis (L.) Stach Myabe Polygonaceae H TH Mic North Mic Phantes and diedenan Jackson Parantegaris (L.) Stach Myabe Polygonaceae T MP Mic Phantego farevelate L. Pendate sometimes and diedenan Jackson Parantegaris (L.) Stach Myabe Phantegrianeeae H TH Mic Phantegrianeeae T MP Mic Phantegrianeeae T Mantercales and micreaties T Mp Mic Phantegrianeeae T Mp Mic Phantegrianeeae T Mintercales T Mp Mic Phantegrianeeae T Mintercales T Mp Mic Phantegrianeeae T Mintercales T Mp Mic Phantegrian	127.	Papaver rhoeas L.	Papaveraceae	Η	TH	Mic	June-July	August
Participation placeare globarus L. Parameticidaceae S MP Mic Participation placeare placeae H TH Mic Perceptoca ophyla Deene S MP L. Participation placeae Mic Mic Persecution are pediosist (Meian.) Miyabe Polygoniaceae H TH Mic Persecution are placease H TH Mic Persecution are placease H TH Mic Persecution are placeaee T MP N Mic Persecution are placeaee T MP N Mic Plantage lawcocland L. Penniaceae T MP Mic Penniaceae T MP M	128.	Papaver somniferum L.	Papaveraceae	Η	TH	Mic	April-May	June
Persistent by Services H TH N A Percent H TH N Persistent by A Persistent Branch Brownest L Asceptialaseae S NP L Persistent or products of Weisen Mischen Brownester (L.) Spath Prince Programe or Persistent C Starten Brandis Prince Program of Prince Pr	129.	Parrotiopsis jacquemontiana (Decne.) Rehder	Hamamelidaceae	S	MP	Mic	March-May	June-July
Persistent appliet Dense Aslepials descene Persistent appliet Dense Persistent appliet	130.	Parthinium hysterophorus L.	Asteraceae	Η	TH	Z	April	May
Persignin angoloris (Meist), Miyabe Polygonaceae H TH Mic Persignin angoloris (Meist), Miyabe Persignin angoloris (Meist), Miyabe Persignin angoloris (Meist), Miyabe Persignin angoloris (L.) Spach Asteraceae H TH N N Pinta variability and in the Mic Pintage oratal.  Panasa validicitient lackson Pintage in the Mic Pintage oratal.  Palango oratal	131.	Periploca aphylla Decne.	Asclepiadaceae	S	ď	Γ	March-July	April-Aug
Persignation (L.) Spach Polygonacea H TH Mic Persignation (L.) Spach Persignat	132.	Persicaria nepalensis (Meisn.) Miyabe	Polygonaceae	Η	TH	Mic	June-Sept	July-Oct
Prints and additional C.B.Clarke Prints communic C.B.Clarke Prints colonyaghii Sang Prints coding control Prints colonyaghii Sang Prints colonyaghii S	133.	Persicaria orientalis (L.) Spach	Polygonaceae	Η	HI	Mic	June-July	August
Pinaseae T MP N Pinaseae T MP N Pinaseae T MP Nic Pinaseae T MP Nic Pinatego larecolara J., Sewat ex Bandis Polaratgo ovata L. Polygomaeae H TH Mic Polygomeeae T MP Mic Ponnic J. Selicaceae T MP Mic Ponnic Aleis (Mil.) D.A. Webb. Rosaceae T MP Mic Ponnic Aleis (Mil.) D.A. Webb. Rosaceae T MP Mic Ponnic Aleis (Mil.) D.A. Webb. Rosaceae T MP Mic Ponnic Ponnic Wall ex Royle) Seud. Peridaceae T MP Mic Ponnic Generica (L.) Basch Ponnic Connic (Wall ex Royle) Seud. Peridaceae T MP Mic Ponnic Generica (L.) Basch Ponnic Aleis (Mil.) D.A. Webb. Rosaceae T MP Mic Ponnic grandum L. Ponnic M. Ponnic grandum L. Ponnic M. Pon	134.	Pertya aitchisonii C.B.Clarke	Asteraceae	Η	TH	Z	July	August
Prinaceae T MP N Pinaceae T MP N Pinaceae T MP N Plantaginaceae T MP Nice Plantaginaceae H TH Mes Plantaginaceae H TH Mes Plantaginaceae H TH Mes Plantaginaceae H TH Mes Plantaginaceae H TH Mic Polygomean oriculare L. Senicaceae T MP Mic Nogonital bombedrensis Cambess, Parama communicaci L. Senicaceae T MP Mic Pranta communicaci L. Perpuls control L. Senicaceae T MP Mic Pranta commidicaci L. Perpuls communicaci L. Perpuls communicac	135.	Pinus roxburghii Sarg.	Pinaceae	Τ	MP	Z	May	July
Pristacia integeration JL.Stewart ex Brandis Annacardiaceae T MP Mic Plantaginaceae H TH Mic Polygonaceae H TH Mic Polygonaceae H TH Mic Polygonama oriculare L. Polygonaceae H TH Mic Polygonaceae H TH Mic Polygonama oriculare L. Polygonaceae H TH Mic Mic Populas comensoa Carriere Rosaceae T MP Mic Prants commercial Cambess. Rosaceae T MP Mic Prants oriculare L. Prants official D.A.Webb. Rosaceae T MP Mic Prants oriculare Cambes Carriere Rosaceae T MP Mic Prants oriculare Cambes Carriere Rosaceae T MP Mic Prants oriculare Cambes Carriere Cambes Carriere Cambes Carriere Cambes Carriere Carriere Cambes Carriere	136.	Pinus wallichiana Jackson	Pinaceae	Τ	MP	Z	May	July
Plantaginaceae H TH Mes Plantaginaceae H TH Mic Plantaginaceae H TH Mic Plantaginaceae H TH Mic Plantaginaceae H TH Mic Plantago ovacal Polygonaceae H TH L Salicaceae T MP Mic Ropulus tomentosa Carriere Rosaceae T MP Mic Prums administract Propulus formestical Propulus formestical Prums demestical Prums commissional demestical Prums commissional demestical Prums control (Mall. D.A. Webb. Rosaceae T MP Mic Prums control (Mall. C. Basch Rosaceae T MP Mic Prums comman cutcis (Mill.) D.A. Webb. Rosaceae T MP Mic Prums comman cutcis (Mill.) D.A. Webb. Rosaceae T MP Mic Prums comman cutcis (Mill.) D.A. Webb. Rosaceae T MP Mic Prums comman cutcis (Mill.) D.A. Webb. Rosaceae T MP Mic Prums comman cutcis (Mill.) D.A. Webb. Rosaceae T MP Mic Rosaceae S NP Mic Rosaceae S NP Mic Rosaceae S NP Mic Rosaceae T MP Mic Rosaceae S NP Mic Rosaceae T MP Mic Rosaceae S NP Mic Rosaceae T MP N Rosaceae T MR Rosaceae T MP N N Rosaceae T MR Rosaceae T MP N N Rosaceae T MR Rosaceae T MR Rosaceae T MP N N Rosaceae T MR	137.	Pistacia integerrima J.L.Stewart ex Brandis	Anacardiaceae	Τ	MP	Mic	May-June	July
Plantaginaceae H TH Mic Polygonaecae H TH Mic Polygonaecae H TH L Polygonaecae H TH L Polygonaecae H TH L Polygonaecae H TH L Populaecaeae T MP Mic Potential beamehadensis Cambess. Rosaceae T MP Mic Prunts admessived L. Params denics (Mill.) D.A. Webb. Rosaceae T MP Mic Prunts admessived L. Batsch Rosaceae T MP Mic Prunts admessived L. Batsch Rosaceae T MP Mic Prunts admessived L. Batsch Rosaceae T MP Mic Prunts accounted (Wall ex Royle) Steud. Prunts exceeded T MP Mic Prunts accounted (Wall ex Royle) Steud. Rosaceae T MP Mic Prunts accounted (Wall ex Royle) Steud. Rosaceae T MP Mic Prunts accounted (Wall ex Royle) Steud. Rosaceae T MP Mic Rantacetus active L. Rantunculaecae H TH Mic Rantacetus active L. Rantunculaecae H TH Mic Rantacetus active L. Rantunculaecae H TH Mic Rantacetus active L. Rantunculaecae S NP Mic Rosaceae S NP Mic Rosaceae S NP Mic Rosaceae S NP Mic Rosaceae S NP Mic Rantacetus active L. Rantacetus L. Lamiaceae S NP Mic Rubus fruitecoars L. Rantacetus Rosaceae S NP Mic Rosaceae S NP Mic Rubus fruitecoars L. Rosaceae S NP Mic Rubus fruitecoars L. Ryshingal inhatat (Benth.) Scheen & V.A. Albert Lamiaceae S NP NP NIC Rosaceae S NP NP NIC Rosaceae S NP NP NIC Rubus fruitecoars L. Ryshingal inhatat (Benth.) Scheen & V.A. Albert Lamiaceae T MP N Nic Rosaceae S NP NP NIC Rubus fruitecoars L. Ryshingal inhatat (Benth.) Scheen & V.A. Albert Ryshingal inhatat (Benth.) Scheen &	138.	Plantago lanceolata L.	Plantaginaceae	Η	TH	Mes	June-July	August
Polygonan arcitave L.         Polygonaceae         H         TH         L           Populas tomentosa Carriere         Rosaceae         T         Mp         Mic           Prums arminiaca L.         Prums arminiaca L.         Rosaceae         T         MP         Mic           Prums domestiva L.         Rosaceae         T         MP         Mic           Prums domestiva L.         Rosaceae         T         MP         Mic           Prums posica (L.) Balsch         Rosaceae         T         MP         Mic           Prums posica (L.) Balsch         Rosaceae         T         MP         Mic           Purica grantum L.         Purica grantum L.         Rosaceae         T         MP         Mic           Purica grantum L.         Purica grantum L.         Rosaceae         T         MP         Mic           Purica grantum L.         Purica grantum L.         Rosaceae         T         MP         Mic           Purica grantum L.         Purica grantum L.         Rosaceae         T         MP         Mic           Purica grantum L.         Romentum capitalis L.         Ranunculas acris	139.	Plantago ovata L.	Plantaginaceae	Η	ΗI	Mic	June-July	August
Populus tomentosa Carrice Populus tomentosa Carrice Populus tomentosa Carrice Populus domentosa Carrice Populus domentosa Carrice Prumas aduetis (Mill, D.A. Webb, Rosaceae T MP Mic Prums aduetis (Mill, D.A. Webb, Rosaceae T MP Mic Prums eperated I., Basch Prums pervice (I., Basch Prums pervice (I., Basch Prums contact (Wall ex Royle) Steud. Prums pervice (I., Basch Prums	140.	Polygonum aviculare L.	Polygonaceae	Η	TH	Γ	June-July	August
Potentila bamehalensis Cambess, Potentila bamehalensis Cambess, Promis anniviacae I. Prumis adalesis (Mill.) D.A. Webb. Prumis adalesis (Mill.) D.A. Web. Prumis adalesis (Mill.) D.A.	141.	Populus tomentosa Carriere	Salicaceae	Τ	MP	Mic	April-May	June-July
Prumus annihideca I.         Rosaceae         T         MP         Mic           Prumus adneis (cd II.)         Prumus adneis (Mill.) D.A. Webb.         Rosaceae         T         MP         Mic           Prumus adneis (Mill.) D.A. Webb.         Prumus experied II.         MP         Mic           Prums persica (L.)         Basch         T         MP         Mic           Purica grandum I.         Purica grandum I.         Purica grandum I.         Mic         N           Pyrus spp.         Pyrus parkita BuchHam. ex D. Don         Rosaceae         T         MP         Nic           Pyrus spp.         Pyrus spp.         Rosaceae         T         MP         Mic           Pyrus spp.         Pyrus spp.         Fagaceae         T         MP         Mic           Pyrus spp.         Pyrus spp.         Pyrus spp.         Mic         Mic         Mic           Quercus sphoragua D. Don.         Fagaceae         T         MP         Mic           Quercus sphoragua D. Don.         Rannunculus caris I.	142.	Potentilla bannehalensis Cambess.	Rosaceae	Η	СН	Z	Aug-Sept	Oct-Nov
Prunts domestica L.         Rosaceae         T         MP         Mic           Prunts dulcis (Mill.) D.A. Webb.         Prants dulcis (Mill.) D.A. Webb.         Rosaceae         T         MP         Mic           Prunts cornata (Wall. ex Royle) Steud.         Rosaceae         T         MesP         Mic           Purica grandmut. L.         Purica grandmut. T         MP         Mic           Purica grandmut. L.         Rosaceae         T         MP         Mic           Quercus spoking BuchHam. ex D. Don         Rosaceae         T         MP         Mic           Quercus spoking BuchHam. ex D. Don         Rosaceae         T         MP         Mic           Quercus spoking acris L.         Rannuculae         H         TH         Mic           Rannuculus acris L.         Mic           Rannuculus auricatus L.         Rannuculus acris L.         Lamiaceae         H	143.	Prunus arminiaca L.	Rosaceae	Τ	MP	Mic	March-April	May-June
Prums dulcis (Mill.) D.A. Webb. Prums dulcis (Mill.) D.A. Webb. Prums dulcis (Mill.) D.A. Webb. Prunts persica (L.) Batsch Prunts corntal (Wall. ex Royle) Steud. Prunts care T MP Mic Royle Steud. Pyrus spp. Pyrus	144.	Prums domestica L.	Rosaceae	Τ	MP	Mic	March-April	May-June
Prums persica (L.) Batsch     Rosaceae     T     Mp     Mic       Prums cornuta (Wall. ex Royle) Steud.     Preridaceae     T     MpesP     Mic       Persi critica L.     Punica grandum L.     Rosaceae     T     Mp     N       Pyrns poshia Buch-Ham. ex D. Don     Rosaceae     T     MP     Mic       Pyrns spp.     Pyrns spp.     Mic     Mic       Pyrns spp.     Pyrns spp.     Mic       Quercus oblongala D. Don.     Fagaceae     T     MP     Mic       Quercus oblongala D. Don.     Fagaceae     T     MP     Mic       Quercus sp.     Rannuculaseae     H     H     Mic       Rannuculas caris L.     Rannuculaceae     H     TH     Mic       Rannuculus arvenis L.     Rannuculaceae     H     TH     Mic       Rannuculus arvenis L.     Rannuculaceae     H     TH     Mic       Rannuculus arvenis L.     Rannuculus arvenis L.     Rannuculus arvenis L.     Rannuculus arvenis L.     Mic       Rosanarius afficinalis L.     NP     Mic       Runex fariatus L.     Robis gonaceae     H     TH     NP     NP     NP       Runex fa	145.	Prunus dulcis (Mill.) D.A. Webb.	Rosaceae	Τ	MP	Mic	March-April	May-June
Prums cornuta (Wall, ex Royle) Steud.         Rosaceae         T         Mic           Plenica L.         Punicaceae         T         MP         Nic           Punica granatum L.         Punicaceae         T         MP         Nic           Pyrus spasita Buch-Ham. ex D. Don         Rosaceae         T         MP         Mic           Pyrus spstia Buch-Ham. ex D. Don.         Rosaceae         T         MP         Mic           Pyrus sp.         Fagaceae         T         MP         Mic           Quercus oblongata D. Don.         Fagaceae         T         MP         Mic           Quercus sp.         Fagaceae         T         MP         Mic           Quercus sp.         Ranunculas acris L.         Ranunculas L.         Ranun	146.	Prunus persica (L.) Batsch	Rosaceae	Ε	MP	Mic	March-April	May-June
Peri daceae H TH Mic Peri daceae H TH Mic Punicaceae T MP N N Rosaceae T MP Mic Punica grandtum L. Punica grandtum L. Punica grandtum L. Punica grandtum L. Pagaceae T MP Mic Fagaceae T MP Mic Pagaceae T MP Mic Fagaceae T MP Mic Ranunculac activity and the management of the management L. Ranunculaceae H TH Mic Ranunculac activity and the management L. Ranunculaceae H TH Mic Ranunculac activity and the management L. Ranunculaceae H TH Mic Ranunculac activity and the management L. Ranunculaceae H TH Mic Ranunculac activity and the management L. Ranunculaceae H TH Mic Ranunculac activity and the management L. Ranunculaceae T NP Mag Rosaceae S NP Mic Rosaceae S NP Mic Rosaceae S NP Mic Rosaceae S NP Mic Rubus fruiticosus L. Rubus fruiticos	147.	Prunus cornuta (Wall. ex Royle) Steud.	Rosaceae	Τ	MesP	Mic	April-June	July
Punica granatum L.         Punica granatum L.         MP         N           Pyrus pashia BuchHam. ex D. Don         Pyrus pashia BuchHam. ex D. Don         Rosaceae         T         MP         Mic           Pyrus spp.         Pyrus spp.         Fagaceae         T         MP         Mic           Quercus sp.         Fagaceae         T         MP         Mic           Quercus sp.         Ranunculus agacailis L.         Ranunculus aguantilis L.         Ranunculus aguantilis L.         Ranunculus aguantilis L.         Ranunculus aguantilis L.         Mic           Ranunculus arvensis L.         Ranunculus aguantilis L.         Ranunculus aguantilis L.         Ranunculus aguantilis L.         Mic           Ranunculus arvensis L.         Ranunculus aguantilis L.         Ranunculus aguantilis L.         Mic           Ranunculus aguantilis L.         Ranunculus aguantilis L.         Ranunculus D. Np         Mag           Ranunculus aguantilis L.         Lamiaceae         S         NP         Mic           Rainis aguantilis L.         Rosaceae         T         NP         Mic           Rainis aguantilis L.         Rosaceae         T         NP         Mic           Rosaceae         S         NP         Mic           Rumex denatus D. Don         Rosaceae	148.	Preris critica L.	Pteridaceae	Η	ΗH	Mic	June-July	August
Pyrus pashia BuchHam. ex D. Don         Rosaceae         T         MP         Mic           Pyrus spp.         Pyrus spp.         Fagaceae         T         MP         Mic           Quercus sp.         Fagaceae         T         MP         Mic           Quercus sp.         Ranunculaceae         T         T         Mic           Ranunculus acrist L.         Ranunculaceae         H         TH         Mic           Ranunculus arcentis L.         Ranunculus acquatilis L.         Ranunculus acquatilis L.         Mic           Ranunculus arcentis L.         Ranunculus acquatilis L.         Ranunculus acquatilis L.         Mic           Ranunculus arcentis L.         Ranunculus acquatilis L.         Ranunculus acquatilis L.         Mic           Raphanus raphanistrum L.         Raphanus raphanistrum L.         Brassicaceae         H         TH         Mic           Rosmarinus afficindis L.         Rosmarinus afficindis L.         Rosmarinus afficindis L.         NP         Mic           Rubus fruticosus L.         Rubus fruticosus L.         Rosaceae         S         NP         Mic           Rubus fruticosus L.         Rubuck dentatus D. Don         Rubuck dentatus D. Don         Rubuck dentatus D. A. Albert         Lamiaceae         H         TH         N	149.	Punica granatum L.	Punicaceae	Ε	MP	Z	June-July	August
Pyrus spp.         Rosaceae         T         MP         Mic           Quercus oblongata D. Don.         Fagaceae         T         MP         Mic           Quercus sp.         Ranunculaceae         T         Mp         Mic           Ranunculus acris L.         Ranunculaceae         H         TH         Mic           Ranunculus acris L.         Ranunculaceae         H         TH         Mic           Ranunculus acris L.         Ranunculus acris L.         TH         Mic         I           Ranunculus acris L.         Ranunculus acris L.         TH         Mic         I           Ranunculus acris L.         Ranunculus acris L.         TH         Mic         I           Ranunculus acris L.         Ranunculus acris L.         Mag         Mic         I           Raphanas raphanas raphanas raphanas acris Communis L.         Rosaceae         T         NP         Mic           Rosacii Fruticosus L.         Rosaceae         S         NP         Mic         N           Rubus fruticosus L.         Rubus fruticosus L.         Rosaceae         S         NP         Mic           Rubus fruticosus L.         Rubus fruticosus L.         Rosaceae         H         TH         N           R	150.	Pyrus pashia BuchHam. ex D. Don	Rosaceae	Τ	MP	Mic	March-April	May-June
Quercus oblongata D. Don.         Fagaceae         T         MP         Mic           Quercus sp.         Ranunculaceae         T         MP         Mic           Ranunculus acris L.         Ranunculaceae         H         TH         Mic           Ranunculus acris L.         Ranunculaceae         H         TH         Mic           Ranunculus arviestus L.         Ranunculaceae         H         TH         Mic           Ranunculus arviestus L.         Ranunculaceae         H         TH         Mic           Ranunculus arviestus L.         Brassicaceae         H         TH         Mic           Ricinis communis L.         Brassicaceae         H         TH         N           Ricinis communis L.         Rosaceae         F         NP         Mic           Rosaceae         Salvicosus L.         Rosaceae         S         NP         Mic           Rubus fruticosus L.         Rubus fruticosus L.         Rosaceae         S         NP         Mic           Rubus fruticosus L.         Rubus fruticosus L.         Rosaceae         H         TH         N           Rubus fruticosus L.         Rubus fruticosus L.         Rosaceae         H         TH         N           Rubus fru	151.	Pyrus spp.	Rosaceae	Ε	MP	Mic	May-June	July
Quercus sp.         Fagaceae         T         MP         Mic           Ranunculus acris L.         Ranunculaceae         H         H         Mic           Ranunculus agravitis L.         Ranunculaceae         H         TH         Mic           Ranunculus muricatus L.         Ranunculaceae         H         TH         Mic           Raphans reginistrum L.         Brassicaceae         H         TH         Mic           Ricins communis L.         Brassicaceae         H         TH         Mag           Rosmarinus officinalis L.         Rosaceae         S         NP         Mic           Rubus fruticosus L.         Rosaceae         S         NP         Mic           Rubus fruticosus L.         Rosaceae         S         NP         Mic           Rubus fruticosus L.         Rubus fruticosus L.         Rosaceae         S         NP         Mic           Rumex dentatus D. Don         Rubus fruticosus L.         Polygonaceae         H         TH         N           Rumex hastatus L.         Rydingia limbata (Benth.) Scheen & V.A. Albert         Lamiaceae         S         NP         Mic           Salicaceae         T         M         NP         Mic         N         N <td>152.</td> <td>Quercus oblongata D. Don.</td> <td>Fagaceae</td> <td>Τ</td> <td>MP</td> <td>Mic</td> <td>June</td> <td>July</td>	152.	Quercus oblongata D. Don.	Fagaceae	Τ	MP	Mic	June	July
Ranunculaceae H H Mic Ranunculaceae H TH Mic Ranunculaceae H TH Mic Ranunculaceae H TH Mic Ranunculaceae H TH Mic Mag Mic Reinis communis L.  Resonariants officinalis L.  Rosnariants officinalis L.  Runex dentatus D. Don Polygonaceae H TH Mes Polygonaceae H TH Mes Polygonaceae H TH Mes Nic Mic Mic Mic Mic Mic Majoratius officinalis L.  Runex dentatus D. Don Polygonaceae H TH Mes Polygonaceae H TH Nic N Nic Mic Naturativa Mic Mic N Nic Mic Naturativa Mic N Nic Naturativa Mic N Nic Naturativa Mic N Nic Naturativa Mic N Nic Naturativa Mic Naturativa Mic Naturativa Mic Naturativa Mic Naturativa Mic Naturativa	153.	Quercus sp.	Fagaceae	Τ	MP	Mic	May-June	July
Ranunculaceae H TH Mic Mic Ranunculaceae H TH Mic Mic Raphams rephanistrum L. Brassicaceae H TH Mic Mag Ricinis communis L. Lamiaceae T NP Mag Mic Rosaceae S NP Mic Rosaceae S NP Mic Mic Mic Mic Munex dentatus D. Don Polygonaceae H TH Mes Polygonaceae H TH Mes Polygonaceae H TH N N N N N N N N N N N N N N N N N	154.	Ranunculus acris L.	Ranunculaceae	Ξ	Η	Mic	May-July	August
Ranunculaceae H TH Mic Nic Nanunculaceae H TH Mic Nic Nationis communis L.  Rephanis rephanistrum L.  Rephanis rephan	155.	Ranunculus aquatilis L.	Ranunculaceae	Η	HI	Mic	May-June	July-Aug
Ranunculas muricatus L.         Ranunculas ea         H         TH         Mic           . Raphanus raphanistrum L.         Brassicaceae         H         TH         N           . Ricinis communis L.         Rosnarians officinalis L.         NP         Mic           . Rubus fruitosus L.         Rosaceae         S         NP         Mic           . Rubus fruitosus L.         Polygonaceae         H         TH         Mes           . Runex dentatus D. Don         Polygonaceae         H         TH         N           . Rydingia limbata (Benth.) Scheen & V.A. Albert         Lamiaceae         S         NP         Mic           . Salicaceae         T         MP         N         N	156.	Ranımculus arvensis L.	Ranunculaceae	Η	TH	Mic	March-April	May-June
Rephanis raphanistrum L.         Brassicaceae         H         TH         N           Ricinis communis L.         Rosmarinus officindis L.         Lamiaceae         T         NP         Mic           Rubus fruitcosus L.         Rosaceae         S         NP         Mic         N           Rubus fruitcosus L.         Rosaceae         S         NP         Mic         N           Rubus dentans D. Don         Polygonaceae         H         TH         N           Rydingia limbata (Benth.) Scheen & V.A. Albert         Lamiaceae         S         NP         Mic           Salicaceae         T         MP         N	157.	Ranunculus muricatus L.	Ranunculaceae	Η	ΗI	Mic	April	May
Ricinis communis L.         Euphorbiaceae         T         NP         Mag           . Rosmarinus officinalis L.         . Runiaceae         S         NP         Mic         Mic           . Rubus fruitcosus L.         . Rubus dentatus D. Don         Polygonaceae         H         TH         Mes           . Rumex hastatus L.         . Rydingia limbata (Benth.) Scheen & V.A. Albert         Lamiaceae         S         NP         Mic           . Salicaceae         T         MP         N	158.	Raphanus raphanistrum L.	Brassicaceae	Н	TH	z	May-June	July
Rosmarinus officinalis L.         Lamiaceae         S         NP         Mic           Rubus fruticosus L.         Rosaceae         S         NP         Mic           Rumex dentatus D. Don         Polygonaceae         H         TH         Mes           Rumex hastatus L.         Polygonaceae         H         TH         N           Rydingia limbata (Benth.) Scheen & V.A. Albert         Lamiaceae         S         NP         Mic           Salicaceae         T         MP         N	159.	Ricinis communis L.	Euphorbiaceae	Τ	Ž	Mag	June-July	August
Rubus fraticosus L.         Rosaceae         S         NP         Mic         I           Rumex dentatus D. Don         Rumex destatus L.         Polygonaceae         H         TH         Mes           Rydingia limbata (Benth.) Scheen & V.A. Albert         Lamiaceae         S         NP         Mic           Salicaceae         T         MP         N	160.	Rosmarimus officinalis L.	Lamiaceae	S	NP	Mic	May-June	June-July
. Rumex dentatus D. Don Polygonaceae H TH Mes Rumex hastatus L. Polygonaceae H TH N N . Rydingia limbata (Benth.) Scheen & V.A. Albert Lamiaceae S NP Mic Salicaceae T MP N  Salicaceae T MP N	161.	Rubus fruticosus L.	Rosaceae	S	ď	Mic	March-April	May-June
. Rumex hastatats L. Rydingia limbata (Benth.) Scheen & V.A. Albert Salicaceae H TH N  Lamiaceae H TH N  Lamiaceae S NP Mic  Salicaceae T MP N	162.	Rumex dentatus D. Don	Polygonaceae	Η	TH	Mes	August	Sept
. Rydingia limbata (Benth.) Scheen & V.A. Albert Lamiaceae S NP Mic Salicaceae T MP N Salicaceae T NP Salicaceae	163.	Rumex hastatus L.	Polygonaceae	Н	TH	Z	April-May	June-July
. Saticaceae I MP N	164.	Rydingia limbata (Benth.) Scheen & V.A. Albert	Lamiaceae	s e	d S	Mic	May-June	July-Aug
	105.	Saltx alba L.	Salicaceae	-	MF	Z	May-June	July

		Table 1. (Cont'd.).	ont'd.).		ife forms alacada	Dieneleen	
S. No	S. No. Species	Family	Plant habit	Life form	Leaf size spectra	Flowering	Fruiting
166.	Salvia moorcrofitana Benth.	Lamiaceae	Ξ	TH	Mes	May	June-July
167.	Sarcococca pruniformis Lindl.	Buxaceae	S	Ν̈́	Mic	Dec-March	April-May
168.	Scandix pectin-veneris L.	Umbelliferae	Η	TH	Γ	April-May	June-July
169.	Scilla griffithii Hochr.	Hyacinthaceae	Η	HI	Γ	March-April	May-June
170.	Sedum rupestre L.	Crassulaceae	Η	СН	Γ	June-July	August
171.	Setlaria pumila (Poir.) Roem. & Schult.	Poaceae	Η	HI	z	April	May-June
172.	Silene conoidea L.	Caryophyllaceae	Η	TH	Z	May-June	July
173.	Sisymbrium sp.	Brassicaceae	Η	TH	Mic	May-June	July
174.	Solamum cordatum Forssk.	Solanaceae	S	СН	Z	April-May	June-July
175.	Solanum nigrum L.	Solanaceae	Н	TH	Mic	March	April-May
176.	Solanum surattense Burn. f.	Solanaceae	Н	TH	Z	May-June	July
177.	Sonchus asper L.	Asteraceae	Η	TH	Z	March-April	May-June
178.	Stellaria media L.	Caryophyllaceae	Η	HI	Γ	May	June-July
179.	Strobilanthes glutinosus Nees	Acanthaceae	Н	Η	Z	March-April	May-June
180	Tagetes minuta. L.	Asteraceae	Η	CH	Mic	Jan-Aug	March-Sept
181.	Taraxacum officinale G.H. Weber ex Wiggers.	Asteraceae	Η	TH	Mic	April-May	June-July
182.	Teucrium capitatum L.	Lamiaceae	Η	CH	Γ	April-Aug	May-Sept
183.	Thalictrum rochebrunianum Franch. & Sav.	Ranunculaceae	S	ΝĎ	Z	July-August	Sept-Oct
184.	Thuja plicata Donn ex. D.Don	Cupressaceae	Τ	MP	Mes	May-June	July
185.	Torilis leptophylla (L.) Rchb. f.	Apiaceae	Η	HI	Mic	May-June	July
186.	Trichodesma indica (L.) Lehm.	Boraginaceae	Η	HI	Z	May-June	July
187.	Trifolium echinatum var. carmeli (Boiss.) Gibelli & Belli.	Papilionaceae	S	N <sub>P</sub>	Z	June-July	August
188.	Trifolium repens L.	Papilionaceae	Η	TH	Z	April-May	June-July
189.	Tulipa chusiana DC.	Liliaceae	Η	HI	Mic	April-May	June-July
190.	Tulipa gesneriana L.	Liliaceae	Н	ΗH	Mic	April-May	June-July
191.	Tulipa turkestanica (Regel) Regel	Liliaceae	Н	HI	Mic	Jan-March	April
192.	Urtica dioica L.	Utricaceae	Η	TH	Mic	March-April	May-June
193.	Valeriana jatamansii Wall.	Valerianaceae	Ξ	Ü	Z	May	June-July
194.	Verbascum thapsus L.	Scrophulariaceae	Ξ	TH	Mes	March-April	May-June
195.	Verbena bipinnatifida Nutt	Verbenaceae	S	Η	T	April	May-June
196.	Veronica anagallis L.	Plantaginaceae	Η	TH	Z	March-April	May-June
197.	Veronica arvensis L.	Plantaginaceae	Η	HI	Mic	May-June	July
198.	Viburnum nervosum D. Don	Caprifoliaceae	S	MP	Mic	Mid May	June-July
199.	Viburnum cotinifolium D. Don	Caprifoliaceae	S	Ž	Mic	June-July	August
200.	Vinca major L.	Apocynaceae	S	Ν	Mic	April-May	June-July
201.	Viola odoratus L.	Violaceae	Η	HI	Mic	Feb-March	April
202.	Vitex negundo L.	Verbenaceae	S	NP	Z	June-July	August
203.	Wulfenia amherstiana Benth.	Plantaginaceae	Η	TH	Z	March-April	May-June
204.	Zanthoxylum armatum DC.	Rutaceae	S	Š	Mes	March-April	May-June
205.	Ziziphus nummularia (Burm.f.) Wight & Arn.	Rhamnaceae	S	NP	Mic	March-June	May-July

Abbreviations for Plant habit: H=Herb, S=Shrub and T=Tree.

Abbreviations for Plant habit: H=Herb, S=Shrub and T=Tree.

Abbreviations for Life form: MP=Megaphanerophytes, MicP=Microphytes, NP=Nanophenrophytes, CH=Chamaephytes, H=Hemicryptophytes, G=Geophytes, TH=Therophytes, L=Liana.

Abbreviations for Leaf size: L=Leptophyll, Nic=Microphyll, Mes=Mesophyll, Mas=Mesophyll.

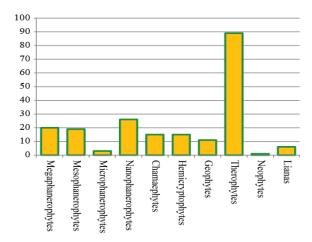


Fig. 6. The Life Form of the plant species recorded from the study area.

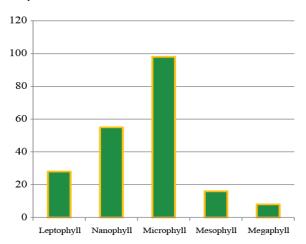


Fig. 7. The Leaf Spectra of the plant species recorded from the study area.

Results show that 10 different life form classes were recorded in the study area (Table 1). The most dominant life form was Therophytes with 89 species (43.68%), followed by Nanophanerophytes 26 species (12.62%), Megaphanerophytes 20 species Mesophanerophytes 19 species (9.22%), Chamaephytes 15 species (7.28%), Hemicryptophytes 15 species (7.28%), Geophytes 11 species (5.33%), Lianas 6 species (2.91%), Microphanerophytes 3 species (1.45%) and Neophytes with 1 species (0.48%) (Table 1 & Fig. 6). In leaf size spectra, Microphyll was the most dominant one with 98 species (47.80%), followed by Nanophyll 55 spp. (26.82%), Leptophylls 28 species (13.65%), Mesophyll 16 spp. (7.80%) and Megaphyll contributing with 8 species (3.90%) (Fig. 7).

In the study area, two flowering seasons were recorded, one from May to August and second from September to November. Similarly, variation was observed in fruiting season but mostly plants flowered from May to August. In the first spell, 195 plant species flowered including herbs (62.56%), shrubs (19.48%), trees (18.46%), grasses (2.56%) and 1.02% ferns. During the second flowering season, 10 plant species flowered

were 50 % shrubs, 30% herbs and 20% trees. There were two exceptional cases which flowered in both flowering seasons including *Narcissus tazetta* and *Cynodon dactylon* (Table 1).

#### Discussion

The main reflection of vegetation of any area is its floristic structure. The flora of a particular region is the sum total of the species within either related to wild or cultivated species (Longhi et al., 1992). Floristic list is also representative of the view that species has its own ecological amplitude and interaction to the environment and to other species (Giusti et al., 1995). According to plant habit, herbaceous growth habit with 129 species was the most dominant one. Our findings are congruent with many researchers of allied, neighboring and national regions (Ijaz, 2014; Ijaz et al., 2015; Khattak et al., 2015; S.M. Khan et al., 2015; K.U. Khan et al., 2015; Shah et al., 2015; Ahmad et al., 2016 and Rahman et al., 2016). Asteraceae and Lamiaceae were dominant families with 15 species each. Igbal et al. (2015) and Ijaz et al. (2016) also reported Asteraceae as the most leading family. Our findings are in agreement with a report of Stewart (1972) that these families were well represented in Pakistan, some other studies also indicated that these families were major families in the flora of Pakistan (Nasir & Ali, 1971-94: Ali & Oaiser, 1995-2004).

Life form is actually due to adaptation of plants in different environmental conditions. Adaptation is very necessary for the survival of plants and to describe vegetation (Mera et al., 1999; Cain & Castro, 1959). In the study area life form of all species were recorded and classified into different classes. Therophytes were dominant followed by Phanerophytes, Hemicryptophytes and Chamaephytes. Similar findings were observed by Hussain et al. (1997) in Girbanr Hills and our result was in agreement with these studies. Hemicryptophytes usually prevail in open physiognomies while Phanerophytes in closed ones (Batalha & Martins, 2002; Barik & Misra, 1998). Therophytes were indicator of cold dry climate at different altitudinal regions of the world in the investigated area high proportion of Therophytes regards these factors. Malik & Malik (2004) studied that Phanerophytes were at high scale in Kotli Hills, the result of present study was in agreement with that.

Phenology is a periodic phenomenon in plants. At different altitude and growing seasons vegetation of any area shows different physiognomic conditions and each species shows different aspect such as flowering, disappearance and appearance. In the investigated area growing season started from March. In March-April few herbaceous and shruby species started growth and few species were in flowering condition. Flowering reaches to its peak during May-August. In investigated area there were two flowering seasons. One from May to August and 2<sup>nd</sup> from September to November similarly fruiting season also varied but mostly plants flowered from May to July. Our findings are congruent with the results of Shrestha et al. (1998); Kim (1996) and Malik (2005). Two flowering seasons were reported in Harboi range, Kalat (Durrani, 2000).

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Usually flowering period starts at the end of dry season and in the beginning of wet period (Morellato, 1995), so in turn fruiting occurred in dry season because the beginning of next rainy period will offer suitable conditions for seed germination (Morellato et al., 1989). According to Marqueus et al. (2004), phenological period and climate of the area are related to each other in terms of temperature, day length and also rainfall. In present study seeds were set down in cold season mostly in December and germinate in next spring season. In majority of plants the leaf falling period is cool season i.e. January and February, leaf flushing usually occurred in warm period i.e. in March and April, in rainy season i.e. in August flowering was at its peak and usually in September and October fruit maturation takes place. In short, in our study area plants grow and goes up to flowering and fruiting stage in warm and wet season and shed seeds which gain cold treatment in winter season and then once again grows up in favorable season.

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