

FLORISTIC COMPOSITION AND PHENOLOGICAL PATTERN OF VEGETATION IN THE NORTH OF SRINAGAR

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ABSTRACT

The paper presents floristic and ecological study of three diverse habitats towards the north of Srinagar. 162 species of flowering plants are enumerated. Data concerning frequency and phenological pattern of the species found in these habitats reveal that short lived early flowering species are predominant in exposed habitats with loose soil structure and perennial forms in shady compact-soil habitats. Shading produces a lag in the phenological pattern of species. Late flowering species are mostly restricted under shaded tree canopy.

INTRODUCTION

The area lying north of Srinagar city is represented by a number of orchards with rich herbaceous undergrowth. A decade ago, a part of this area was converted into the Kashmir University Campus, and most of the fruit trees were cut. Further consequent biotic interference in the Campus has converted this area into an open type of grassland with few scattered trees and black berry bushes, and a few lawns. Adjoining the Campus is a close stand of *Platanus orientalis* Linn., the ground floor of which is subjected to considerable trampling effects.

The general vegetation of the University Campus was described by Kaul and Zutshi (1966) who divided the area into few ecological habitats and enumerated species for each. The soils were investigated by Kachroo and Daftari (1969). The present study includes data concerning floristic composition and phenological changes in the plant cover over different seasons of the year, during 1968 and 1969. The area is nearly 6 sq. km.

The coverage was calculated from the line intercept method (Misra, 1968). Frequency data concerning herbaceous vegetation were calculated from one meter quadrats, the sampling being repeated after every two months. Phenological pattern was arrived at from occasional surveys of the areas.

FLORISTIC COMPOSITION

Intensive trampling in the adjoining *Platanus* stand (Naseem Bagh) has caused marked reduction in ground cover and laid barren most of the area. The soil is sufficiently compact and most annuals fail to grow excepting by the sides of channels, which

are less trampled. Conspicuous shading of the area (tree cover 75%) keeps ground sufficiently moist and suitable for such plants as *Bellis perennis* Linn., *Plantago major* Linn., *Clinopodium umbrosum* (M.B.) C. Koch., *Prunella vulgaris* Linn. and *Geranium nepalense* Sweet. Small channels protected from trampling and remaining moist for some time support *Rorippa nasturtium-aquaticum* (L.) Schinr. and Thell., *Veronica beccabunga* Linn., *Polygonum persicaria* Linn., *Agrostis stolonifera* Linn. etc. Along the cutting grow *Mentha longifolia* Huds., *Ranunculus laetus* Wall., *Potentilla reptans* Linn., *Nepeta cataria* Linn. etc. However, their reproductive potential is sufficiently low due to conspicuous shading and trampling, thus most of the herbs are perennials.

In the University Campus, especially in unfrequented parts, where the soil is sufficiently loose and not subject to trampling and rodent activity, a rich growth of grass-legume association is supported by several annual forms. These also flourish best in scraped and ploughed areas as well as on soil exposed by rodent activity. Here due to high illumination (tree cover 5%) reproductive potential is sufficiently high. *Crepis sancta* sub. sp. *bifida* (Vis.) Thell. ex Babc., *Euphorbia helioscopia* Linn., *Medicago minima* Lamk., *Vulpia myuros* (L.) Gmel., are conspicuous part of spring and early summer vegetation, while perennial hardy species like *Cynodon dactylon* (L.) Pers., *Bothriochloa pertusa* (L.) A. Camus, *Medicago sativa* Linn., *Sorghum halepense* (L.) Pers. are major components of summer vegetation. More hardy summer enduring annual-bien-

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nials are *Carduus onopordioides* Fisch. ex Bieb., *Carthamus lanatus* Linn., *Centaurea iberica* Stev. etc. More susceptible species like *Chenopodium album* Linn., *Amaranthus caudatus* Linn. and *Eragrostis poaoides* Beauv. occur in cultivated beds which receive some amount of water by irrigation. The exposed shallow water stands are covered with rich growth of sedges in summer.

Though tree cover of orchard is sufficiently extensive (80%) yet due to less height and density of branches as compared to those of *Platanus* trees shading is comparatively less effective. Moderately shaded areas which support grass-legume association are subjected to scraping and are invaded by most annual species. As the area receives liberal irrigation during summer a rich herbaceous vegetation develops under limited grazing and scraping. Some of the species that flourish in ploughed areas around trees are *Cirsium arvense* Scop., *Torilis leptophylla* (L.) Reichb., *T. nodosa* (L.) Gaertn., *Valerianella szovitziana* Fisch.

SEASONAL PATTERN

Severe cold during winter checks growth of most annuals; only *Senecio vulgaris* Linn. manages to flourish and reproduce throughout winter months. Of the annuals which germinate in late autumn a few including *Euphorbia helioscopia* Linn., *Erodium cicutarium* Leman., *Veronica persica* Poir., and *Stellaria media* Linn. survive through cold winter months in early vegetative condition. This is also true for the rest of the late autumn growth of *Verbascum thapsus* Linn., *Salvia moorcroftiana* Wall., *Linaria dalmatica* (L.) Mill. etc. The first major impetus to growth is received from early heat of March (with only a slight lag in orchard and *Platanus* stand, because trees are still leafless) when earlier germinated plants begin to flower and several new ones germinate and cover the ground. *Stellaria media* Linn., *Euphorbia helioscopia* Linn., *Erophila verna* (L.) Mey., *Bellis perennis* Linn., etc., are among the early spring forms to flourish in their respective habitats. By the time they fruit (April-May), species like *Crepis sancta* sub. sp. *bifida* (Vis.) Thell. ex Bab., *Medicago minima* Lamk., *Plantago lanceolata* Linn., in the Campus; and *Trifolium repens* Linn., *Medicago lupulina* Linn., *M. minima* Lamk., *Plantago lanceolata* Linn. in the orchard: supported at both sites by grasses like *Poa annua* Linn., *P. bulbosa* Linn., *Bromus japonicus* Thunb., *Vulpia myuros* (L.) Gmel. come to form a conspicuous part of the vegetation. In the *Platanus* stand is

discernible sparse flowering of *Plantago lanceolata* Linn., *Poa bulbosa* Linn., *Trifolium repens* Linn., *Bellis perennis* Linn. etc. With the advent of summer, most of these forms begin to fruit and dry; with sufficient lag in the plants of the orchard area due to irrigation (at this stage) and shading, latter also having a pronounced effect in the *Platanus* stand. At this stage most of the perennial shade forms like *Mentha longifolia* Huds., *Prunella vulgaris* Linn., *Clinopodium umbrosum* (M.B.) C. Koch. and *Nepeta cataria* Linn. flourish and flower together with *Polygonum persicaria* Linn., *P. aviculare* Linn., *Polypogon fugax* Nees etc. In open grasslands much hardier species like *Carduus onopordioides* Fisch. ex Bieb., *Centaurea iberica* Stev., *Carthamus lanatus* Linn., *Salvia moorcroftiana* Wall., *Cichorium intybus* Linn. etc., flower.

With most of the summer forms fruiting hardier species like *Lespedeza gerardiana* Grah., *L. juncea* Pers., *Bothriochloa ischaemum* (L.) Keng, *Cynodon dactylon* (L.) Pers., *Lactuca seriola* Linn. and *Sorghum halepense* (L.) Pers. begin to flower. At this stage several annuals like *Setaria glauca* Beauv., *Eragrostis poaoides* Beauv., *Amaranthus caudatus* Linn., and *Euphorbia emodi* Hook. f. flourish especially in ploughed areas. In shaded portions of the orchard *Torilis leptophylla* (L.) Reichb., *Cynoglossum glochidiatum* Wall., and *Daucus carota* Linn. begin to flower and fruit.

During rainless September-October most of the plants are found fruiting or dry, excepting a few hardier species like *Lespedeza gerardiana* Grah., *Artemisia absinthium* Linn., *Lactuca seriola* Linn., *Erigeron bonariensis* Linn. and *E. canadensis*, which grow in grasslands.

In October-November when temperature is low and soil moisture-level increases due to dew precipitation, many perennials initiate new growth and several annuals germinate. But most of these are susceptible to winter frost and only a few manage to survive in dormant conditions, until the following spring, when fresh growth is initiated.

DISCUSSION

The diverse habitats considered here though forming part of same stretch of land, yet represent the effect of differential biotic activity on the floristic composition of the stands. A strong seasonal phenological pattern of vegetation is discernible especially in open grassland of Campus. This is modified in the orchard by artificial irrigation in

summer, resulting in prolongation of growth period and initiation of fresh development.

A comparison of stands based on frequency data using Kulczynski's formula is represented in Table I. Obviously the Campus grassland and the orchard are very much related to each other, while the Campus-Naseem Bagh stands stand apart. The Naseem Bagh is more related to the orchard as both represent shaded habitats. However, in the cold months all the stands approach one another, yet during the summer there is sudden decrease of community co-efficient between the grassland of the Campus and the orchard. This is result of liberal irrigation of the orchard at this time, while the vegetation of the Campus is subjected to dry heat of the Summer. Deep shading at the Naseem Bagh site makes it different from the Campus.

The moisture level and degree of illumination of the stands combined with effect of degree of human interference mainly control distribution of herbaceous vegetation. Most annuals flourish in spring while hardy ones and the perennials flourish during summer mainly with the help of their deep underground system. Most of the shade forms grow slowly and reach their reproductive stage during summer.

The general phenological pattern is often disturbed by cutting and scraping of vegetation and in small water channels, by duration of water in them.

SUMMARY

Data for frequency and phenologic pattern of the species growing at three adjacent sites were analysed. The sites differ in nature and density of tree cover, as also the intensity of biotic interference. The more exposed habitat of the Campus supports majority of annuals which complete their life cycle before the dry conditions set in. The shaded habitat of *Platanus* stand, with compact soil supports perennial forms which grow slowly to reach reproductive

stage in summer. The orchard habitat combines the features of the two other habitats. The shaded habitats show a lag in phenologic pattern as compared to the exposed ones.

A total of 162 species of Phanerogams is listed. Two of them: *Senecio vulgaris* Linn. and *Torilis nodosa* (L.) Gaertn. are new records for Kashmir. Former is peculiar in that it is the only weed that flowers throughout the winter months.

Appendix : Seasonal frequency and distributional data

Species	Frequency classes						Distributional Remarks
	J	M	M	J	S	N	
	a	a	a	u	e	o	
	n.	r.	y	l.	p.	v.	
Adonis aestivalis Linn.	-	A	A	-	-	-	Pl.
	-	A	A	-	-	-	
	-	-	-	-	-	-	
Aegilops tauschii Coss.	-	A	A	-	-	-	Cn.
	-	A	A	A	-	-	
	-	-	-	-	-	-	
Agrostis stolonifera Linn.	-	-	-	-	-	-	Dp. & Md.
	-	-	A	A	A	-	
	-	-	A	A	A	-	
Alyssum minimum Willd.	-	A	A	-	-	-	Pl.
	-	-	-	-	-	-	
	-	-	-	-	-	-	
Anagallis arvensis Linn.	-	-	A	A	-	-	Pl.
	-	-	A	A	-	-	
	-	-	-	-	-	-	
Artemisia absinthium Linn.	-	A	A	A	A	A	Ng.
	-	A	A	A	A	A	
	-	-	-	-	-	-	
Arenaria serpyllifolia Linn.	-	-	C	-	-	-	Pl. & Sc.
	-	-	B	-	-	-	
	-	-	A	-	-	-	
Astragalus grahamianus Royle	A	A	A	A	A	A	Ng.
	-	-	-	-	-	-	
	-	-	-	-	-	-	
A. leucocephalus R. Grah.	-	A	A	A	A	A	Ng.
	-	-	-	-	-	-	
	-	-	-	-	-	-	
Astragalus subumbellatus Kl.	-	A	A	-	-	-	O.G.
	-	-	-	-	-	-	
	-	-	-	-	-	-	
Avena fatua Linn.	-	-	A	-	-	-	Ng.
	-	-	A	-	-	-	
	-	-	-	-	-	-	
Amaranthus caudatus Linn.	-	-	A	A	-	-	Pl.
	-	-	A	A	-	-	
	-	-	-	-	-	-	
Alopecurus aequalis Sobol.	-	-	-	-	-	-	Cn.
	-	-	A	-	-	-	
	-	-	-	-	-	-	

TABLE I : Community Coefficient data

Months	Campus : Orchard	Campus : Naseem Bagh	Orchard : Naseem Bagh
January	76.4	65.9	63.3
March	76.2	43.4	51.5
May	71.7	36.2	44.2
July	56.2	29.3	44.2
September	64.4	30.7	43.1
November	71.6	42.4	55.1

Arthraxon lanceolata (Roxb.) Hochst.	- A A A A A - - - - - - - - - -	Dp.	Carpesium cernuum Linn.	- - - - - - A A A A - - A A A A -	S.G. & Dp.
Arabis nuda Belang.	- A A - - - - A A - - - - A A - - -	Pl. & Sc.	C. abrotanoides Linn.	- - - - - - A A A A A - B B B B B	—do—
Asperugo procumbens Linn.	- - - - - - A A - - - - - - - -	Pl. & Sc.	Chenopodium album Linn.	- - - A A - - - - A A A - - - - -	Pl.
Bothriochloa pertusa (Linn.) A. Camus	- - C C C C - B B B B - A A A A	O.G.	Cannabis sativa Linn.	- - - - - - - A A A - - - - - -	Ng. & S.G.
Bromus japonicus Thunb.	- B C - - - - A B A - - - A A A - -	O.G. & Sc.	Cardamine hirsuta Linn.	- A A - - - - A A - - - - A A - - -	S.G. & Dp.
B. scoparius Linn.	- - B - - - - - A A - - - - - - -	—do—	Crepis sancta (L.) Babc. sub. sp. bifida (Vis.) Thell ex Babc.	- A D - - - - A C A - - - A A - - -	Pl. & O.G.
Bellis perennis Linn.	- A A A A A - - - - - - C C A C C	S.G.	Cynoglossum glochidiatum Wall. ex DC.	- - - - - - - A A A - - - A A A -	S.G.
Capsella bursa-pastoris Medic.	- B B - - - - B B A - - - A A A - -	O.G. & S.G.	Cyperus rotundus Linn.	- - A A A - - A A A A - - A A A A -	Pl. & Dp.
Carduus onopordioides Fisch. ex. Bieb.	A B B B - A A A A A - A A A A A - A	Ng.	C. iria Linn.	- - A A A - - - - - - - - - - -	S.W. & Dp.
Carthamus lanatus Linn.	- - A A A - - - A A A - - - A A A -	—do—	C. fuscus Linn.	- - A A A - - - - - - - - - - -	—do—
Caucalis latifolia Linn.	- - A A - - - - A A - - - - - - -	BSc., Pl. & Sc.	C. difformis Linn.	- - A A A - - - - - - - - - - -	S.W. & Dp.
Clinopodium umbrosum (M.B.) C. Kech.	- - - - - - A A A A A - B B B A A	S.G.	Cynodon dactylon (L.) Pers.	- E E E E E - D D D D D - B B B B B	O.G. & S.G.
Ceratocephalus falcatus (L.) Pers.	A A - - - - A A - - - - - - - -	Md. & O.G.	Clinopodium vulgare Linn.	- - A A - - - - A A A - - - A A A -	Bs. & S.G.
Cerastium vulgatum Linn.	- B C - - - - A B A - - - A A A - -	Sc. & Pl.	Coronopus didyma (L.) Smith.	- A A - - - - - - - - - - - - -	Sc. & Pl.
Convolvulus arvensis Linn.	- A B B A - - A A A - - - - A A A -	—do—	Descuraina sophia (L.) Webb. ex Prantl.	- B B - - - - A A - - - - - - - -	Sc. & Pl.
Cirsium arvense Scop.	- - - - - - A A A - - - - - - -	Dp. & Pl.	Daucus carota Linn.	- A A A A - - A B B B - - A A A A -	Ng., Pl. & S.G.
C. wallichii DC.	- - - - - - - A A - - - - A A - -	Ng. & Dp.	Euphorbia helioscopia Linn.	B B B - - B B B B - - B A A A - - A	Pl., S.G. & Sc
Cichorium intybus Linn.	- B B A - A - A B B A A - A A A A A	Md., Sc. & Dp.	E. emodi Hook. f.	- - - B B - - - - A A A - - - - -	Sc. & Pl.
Centaurea iberica Stev.	- A A A A - - A A A A - - A A A A -	Ng. & Md.	Erigeron canadensis Linn.	- - A B B A - - - A A A - - - - -	Pl., Sc. & Md.

Erigeron bonariensis Linn.	- - A B B A - - A A A A - - - - -	Pl., S.C. & Md.	J. lampocarpus Ehrh.	- - A A A A - - - - - - - - - -	S.W.
Erophila verna (L.) E. Meyer.	- A - - - - - A A - - - - B A - - -	S.G. & Pl.	Lathyrus aphaca Linn.	- A A - - - - A G A - - - - - - -	Sc. & Pl.
Erodium cicutarium Leman.	A B A - - A A A B - - A A A A - - A	Sc. & O.G.	L. inconspicuus Linn.	- - A - - - - - B A - - - - - - -	Sc. & Pl.
Eragrostis poaeoides Beauv. ex Leman. & Schulz.	- - - A A - - - - B B - - - - - -	Pl. & Dp.	Lamium amplexicaule Linn.	- A A - - - - A A - - - - - - - -	Pl
Filago arvensis Linn.	- A A A - - - - - - - - A - - - -	O.G. & Pl.	Lespedeza juncea Pers.	- C C C C C - B B B B B - A A A A A	O.G.
Fumaria vaillantii Loesel.	- A - - - - - A A - - - - - - - -	Pl. & Bs.	L. gerardiana Grah.	- - A A A A - - - - - - - - - -	O.G.
Fimbristylis diphylla Vahl	- - - A A A - - - - - - - - - -	Dp. & S.W.	Linaria dalmatica (L.) Mill.	- A A A A A - - - - - - - - - -	Md. & O.G.
Galium tricornes Stokes	- A A - - - - A B A - - - - - - -	Pl. & Bs.	Lotus corniculatus Linn.	- A B B - A - A A A - A - - - - -	O.G. & S.G.
G. tenuissimum Bieb.	- - A A - - - - A A - - - - - - -	—do—	Lycopsis orientalis Linn.	- - A - - - - - A - - - - - - - -	Pl. & S.G.
Gagea stipitata Merkl.	- A A - - - - A A - - - - - - - -	S.G.	Lithospermum arvense Linn.	- A A - - - - A B - - - - - - - -	Pl. & S.G.
G. gageoides (Zucc.) Vved.	- - - - - - - - - - - A - - - -	—do—	Lophochloa phleoides (Vill) Reichb.	- - A - - - - - A - - - - - - - -	O.G. & Sc.
Geranium pusillum Burm. f.	A A A - - - A B B - - - A A A - - -		Lactuca serriola Linn.	- - B B B - - - A A A - - - - - -	Md., Pl. & Ng.
G. nepalense Sweet	- - - - - - A A A A - - A A A A -	S.G. & Dp.	L. dissecta D. Don	- A A - - - - A A - - - - - - - -	Pl. & Sc.
Galinsoga parviflora Cav.	- - - - - - - A A A - - - - - -	S.G. & Bs.	Lolium temulentum Linn.	- - A A - - - - B A - - - - - - -	S.G. & Cn.
Brachiaria cruciformis (Sm.) Griseb.	- - - A A - - - - A B - - - - - -	Dp. & Pl.	L. perenne Linn.	- - A A A A - - A A A A - - - - -	O.G. & S.G.
Hypericum perforatum Linn.	- A A A A A - - - - - - - - - -	Ng. & Bs.	Marrubium vulgare Linn.	A A A A A A A A A A A A A A A A A A	Ng. & Md.
Hordeum murinum Linn.	- A A - - - - A A - - - - - - - -	Ng.	Medicago hispida Gaertn. var. denticulata (Willd.) Barnet.	- A A - - - - A A A - - - A A A - -	Pl. & S. G.
Indigofera gerardiana Wall.	- - A A A - - - - - - - - - - -	O.G.	M. minima Lamk.	- B C - - - - B C - - - - A A - - -	Pl., S.G & Sc.
Juncus glaucus Ehrh.	A A A A A A - - - - - - - - - -	S.G. & Dp.	M. lupulina Linn.	- C C A A B - C C B A B - A A A A A	O.G. & S.G.

Medicago sativa Linn.	- C D D C C - C C B B B - - - - -	O.G. & S.G.	Potentilla reptans Linn.	A A A A A A A A A A A A A A A A A A	Dp. & S.G.
Malva parviflora Linn.	- A A - A A - A A A A A - A A A A A	Pl., S.G. & Ng.	Phleum paniculatum Huds.	- - A A - - - B A - - - - - - -	Sc. & S.G.
Mentha longifolia Huds.	- - - - - - A A A A - - A A A A -	S.G., D.P. & Cn.	Prunella vulgaris Linn.	- A A A A A - A A A A A - A A A A A	S.G. & Dp.
Melilotus alba Lamb.	- - A A A A - - A A - - - - - - -	Ng.	Polypogon fugax Nees ex Steud.	- - A A A A - - A A A - - - A A A -	Dp. & Cn.
Myosotis micrantha Pall.	- - A - - - - - A A - - - - - - -	Sc. & S.G.	P. monspeliensis (L.) Desf.	- - B - - - - - B - - - - - - - -	S.G. & Sc.
Myriactis nepalensis Less.	- - - - - - - A A - - - - - A A A	S.G.	Portulaca oleracea Linn.	- - - A A - - - - A A - - - - - -	Pl. & Sc.
Nepeta cataria Linn.	- A A A A A - A A A A A - A A A A A	S.G. & Ng.	Pycnus globosus Reichb.	- - A A - - - - - - - - - - - -	Dp. & S.W.
Oxalis corniculata Linn.	- A A A - A - A A A A A - A A A A A	Pl. & S.G.	P. sanguinolentus Nees	- - - A A - - - - - - - - - - -	—do—
Neelia apiculata (Fisch., Mey & Ave-Lall) C. A. Mey.	- A A - - - - A A - - - - - - - -	Pl.	Ranunculus muricatus Linn.	- A A - - - - A A - - - - A A - - -	S.G. & Dp.
Papaver dubium Linn.	- A A - - - - A A - - - - - - - -	Pl.	R. arvensis Linn.	- B B - - - - B C A - - - - - - -	Sc. & Pl.
P. macrostomum Boiss. et Huet.	- A A - - - - A A A - - - - - - -	Pl.	R. laetus Wall.	- - - - - - - - - - - A A A - -	S.G. & Cn.
Plantago lanceolata Linn.	- D E A A D - C D A A C - B C A A B	O.G., S.G. & Pl.	Rubus ulmifolius Schott.	B B B B B B A A A A A A - - - - -	O.G. & Md.
P. major Linn.	- A A A A A - - A A A A - - A C C A	S.G. & Dp.	Rumex dentatus Linn.	- A A A - A - A A A - A - A A A - A	S.G. & Cn.
Poa annua Linn.	- A A - - A - B B A - A - B B A A A	O.G. & S.G.	Rorippa islandica (Oeder) Barbas.	- - - - - - A A - - - - A A - - -	—do—
P. pratensis Linn.	- B B - - A - C C - - B - A A - - A	—do—	R. nasturtium aquaticum (L.) Schinr & Thell.	- - - - - - A A A - - - A A A A A	—do—
P. bulbosa Linn.	- B C - - - - B C B - - - A A A - -	—do—	Garhadiolus minutissimus (Bunge) Kitamura	- - A A - - - - A A - - - - - - -	Sc. & Pl.
Polygonum aviculare Linn.	- - A A - - - - A A A - - - C C B -	S.G. & Pl.	Sonchus arvensis Linn.	- - - - - - A A A - - - - - - -	Pl.
P. persicaria Linn.	- - A A A - - - A A A - - - A A A -	S.W. & Cn.	S. asper Vill.	A A A - - A A A A - - A - - - - -	Ng. & Pl.
P. plebejum R. Br.	- - A A A - - - A A A - - - - - -	Pl. & Sc.	S. oleraceus Linn.	- A A A - - - A A A - - - - - - -	—do—
P. recumbens Royle	- - A A A A - - - - - - - A A A A	Pl.	Scandix pectenvenenis Linn.	- A A - - - - B B A - - - - - - -	Sc. & Pl.
			Senecio vulgaris Linn.	A A A - - A B A A - - A - - - - -	S.G. & Pl.

Scrophularia himalensis Royle	- A A A A A - - - - - - - - - -	Ng. & S.G.	V. persica Poir	B C B - - C B C B - - B A A A - - A	O.G., S.G. & Pl.
Setaria glauca Beauv.	- - - B A - - - - A A - - - - - -	Sc. & Pl.	V. didyma Tenore	A B A - - B A B B - - B A A A - - A	—do—
Stellaria media Linn.	A B A - - B A A A - - A A A A - - A	Sc., Pl. & S.G.	V. verna Linn.	- - A - - - - - B A - - - - A A - -	—do—
Sorghum helepense (L.) Pers.	- A C C C A - A B B B A - A A A A A	O.G., Sc. & Pl.	V. beccabunga Linn.	- - - - - - - - - - - - A A A -	Cn.
Salvia moorcroftiana Wall.	- A A A A - - - - - - - A A A - A	Md. & Ng.	V. biloba Linn.	- A C A - - - A B A - - - A A A - -	O.G. & Sc.
Solanum nigrum Linn.	- - A A A - - - A A A - - - - - -	Pl.	V. arvensis Linn.	- A - - - - - - B A - - - - A - - -	Sc. & S.G.
Sclerochloa dura (L.) P. Beauv.	- - A A - - - - - - - - - - - -	Dp. & S.G.	Valerianella dentata Poll.	- - B - - - - - B - - - - - A - - -	—do—
Sisymbrium loeselii Linn.	- A B A - - - A B A - - - - - - -	Sc. & Pl.	V. szovitziana Fisch.	- - - - - - - A - - - - - - - -	S. G. & Sc.
S. irio Linn.	- A A - - - - - - - - - - - - -	—do—	Verbascum thapsus Linn.	A A A A A A A A A A A A A A A A A A	Ng. & Ml.
Stachys sericea Wall.	- A A A A - - A A A A - - - - - -	S. G. & Pl.	Verbena officinalis Linn.	- - A A B - - - A A A - - - - - -	Ng., Sc. & S.G.
Taraxacum officinale Wigg.	- B A - - A - C B A - B - B A A - A	S.G. & O.G.	Vulpia myuros (Linn.) Gmel.	- B D - - - - B C - - - - A A - - -	O.G. & Sc.
Trifolium pratense Linn.	- A A A A A - - A A A A - - A A A A	—do—	Viola sylvatica Fries.	- - - - - - A A - - A - A A - - A	S.G. & Bs.
T. repens Linn.	- A A A A A - E E C B D - C G B A C	S.G. & Dp.	Frequency classes : A : 1-20%, B : 21-40%, C : 41-60%, D : 61-80% and E : 81-100%.		
Thymelaea passerina (L.) Coss.	- - - A A - - - - A A - - - - - -	Pl. & Sc.	Distribution		
Tragopogon pratense Linn.	- - A A A - - - A A A - - - - - -	Sc. & Ng.	Pl.	= Ploughed areas	
Tulipa stellata Hook. f.	- A - - - - - A A - - - - A A - - -	O.G. & S.G.	Sc.	= Scraped ground	
Torilis nodosa (L.) Gaertn.	- - - - - - - B A - - - - - - -	S.G. & Sc.	Ng.	= Neglected areas	
T. leptophylla (L.) Reichb.	- - A A A - - - A B B - - - A A A -	S.G. & Bs.	Dp.	= Damp places	
Urtica dioeca Linn.	- - - - - A A A A A A A A A A A A	Ng. & S.G.	O.G.	= Open grass lands	
Veronica stewartii Pennell	- - - - - - A A - - - - - - - -	Pl.	Md.	= Mounds slopes etc.	
			Cn.	= Irrigation channels	
			Bs.	= Among Bushes	
			S.W.	= Shallow water stands	
			Pt.	= Pathways	
			S.G.	= Shaded ground	
			Against each species	Top row = Campus	
				Middle row = Orchard	
				Lower row = Nascem Bagh Platanus stand	

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