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Floristic Diversity in Urban Forest of Dr. Panjabrao Deshmukh Krishi Vidypeeth, Akola, Maharashtra

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Dicot, family, genera, monocot, species and Urban forest

ABSTRACT

The study was carried out in urban forest of Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola. A total of 89 species belonging to 74 genera and 35 families have been collected and documented from the university. Out of these, 82 species with 68 genera of 33 families belong to dicots, 7 species and 6 genera of 2 families belong to monocot. Data reveals that dicots dominate over monocots in the vegetation of the area.

INTRODUCTION

Forests are the chief resource for the collection and exploration of biological material. The past few decades have witnessed large scale deforestation in India due to substantial pressure generated by population growth demanding more land for agriculture, urbanization and industrial activities in addition to increased demand for fuel wood and timber. This has resulted in the loss of soil cover habitat destruction, environmental degradation and ecological imbalance. This scenario has created a progressive awareness for the conservation and restoration of habitat and thus resulting in notifying many forest areas into protected zones, such as National Parks, Sanctuaries and Biosphere Reserves. Maharashtra has been occupying a pivotal place in the country for its rich and varied biodiversity and to conserve 6 National Parks and 23 sanctuaries.

The urban forest of Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola is having rich diversity with varied flora and fauna. It is located at Akola in Vidarbha region of Maharashtra. The university has over a total 3425 hectares of land out of which the total area of main campus of university is 1266.03 ha. The work on floristic diversity of the university has not been carried out in the past. Hence, an attempt has been made to undertake the survey in the urban forest of Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola with the objective to collect, identify and process the floristic elements of the study area and making permanent records for herbarium.

MATERIAL AND METHODS

Dr. Panjabrao Deshmukh Krishi Vidyapeeth (Agriculture University) is situated at $77^{0}02'42E$ longitudes and $20^{0}42^{0}0N$ latitudes. The university has over a total 3425 hectares of land out of which the total area of the main campus of the University is 1266.03 ha. The average annual rainfall is between 700 to 950 mm and on an average there are 53 rainy days in a year. The temperature rises rapidly after February till May, which is the hottest month of the year. In May the

mean daily maximum temperature is 43.3°C and means daily minimum temperature is 29.5°C,

Extensive field survey of the entire area was carried out in the urban forest of Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola. The collection of the voucher specimens were undertaken during flowering/fruiting period to facilitate the process of identification covering all season of the year. For collecting specimens for the herbarium, majority of the herbs were uprooted carefully as complete plants (root to flower/fruit), taking special care to dig out subterranean parts. In other cases, branches of suitable size in flowering and/or fruiting stages were taken. Field number for each collection was attached to the specimens. The specimens were pressed in blotting papers in the fields in wooden and iron presses. Large specimens were folded like V, N, M or W. After drying the specimens in oven, identification of the specimens was done according to the field characters by comparison in the herbarium and consulting various floras for confirmation of identity. For description of specimens, macroscopic characters of the gathered specimens and field observation were used. Nomenclature has been made up to date with the help of recent taxonomic literature, staff members of the university, referred published books namely Flora of Akola district (Kamble and Pradhan 1988), Forest flora of Melghat (Patel 1968), Aditions to the flora of Melghat (Bhogaonkar and Devarkar 1999), The forest flora of Maharashtra state vol.1 (Singh and Karthikeyan 2000) and The forest flora of Maharashtra state vol.2 (Singh and Karthikeyan 2001).

RESULTS AND DISCUSSION

The survey undertaken in the urban forest of the university comprised of collection of the specimens, their processing and identification. After ascertaining the identity, the plant species were referred to their respective families and arranged on the basis of Bentham and Hooker's system of classification. The floras are namely *Azadirachta indica, Tectona grandis, Emblica officinalis, Dalbergia sissoo, Cassia fistula, Acacia nilotica* and *Albizia lebbeck.* Predominent shrubs are *Carissa carandas, Lantana camara, caesalpinia crista.* Among grasses, *Aristida funiculata, Dichanthium annulatum* and *Digitaria ciliaris* are important part of the biodiversity in the University.

The systematic enumeration of plant species is presented in Table 1. In all 89 plant species belonging to 35 families have been collected from the study area. Out of these 82 species (92.13%) belong to dicotyledons comprising 68 genera and 7 (7.87%) to monocots comprising 6 genera. The list of plant with name, family, flowering and fruiting period and location of the species documented in the urban forest of the university is given in Table 2.

Table 1. Systematic enumeration of plant species.

	Species	Genera	Families
Dicots	82	68	33
Monocots	7	6	2
Total	**89**	**74**	**35**

Table 2. List of plant species documented in the urban forest of Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola

Sr. No	Latin name	Local Name	Family	Flowering and Fruiting Period	Location
1	*Abrus precatorius*	Gunj	Fabaceae	August-January	C.R.S. Office
2	*Acacia catechu*	Khair	Mimosaceae	July-October	Department Of Agronomy
3	*Acacia leucophloea*	Hiwar	Mimosaceae	July-November	C.R.S. Office
4	*Acacia nilotica*	Babul	Leguminosae	May-June	Malkapur Block
5	*Acacia pennata*	Chilati	Fabaceae	October-February	C.R.S. Office
6	*Achyranthes aspera*	Chirchira	Amaranthaceae	October-December	Department Of Agronomy
7	*Adansonia digitata*	Elephant foot tree	Malvaceae	October-December	Department Of Forestry
8	*Adhatoda vasica*	Adulsa	Acanthaceae	October-February	Information Technology
9	*Adina cordifolia*	Haldu	Rubiaceae	June-October	Department Of Forestry
10	*Aegle marmelos*	Bel	Rutaceae	August-December	Department Of Horticulture
11	*Ailanthus excelsa*	Maharukh	Simaroubaceae	May-June	MalkapurBlock
12	*Albizia lebbeck*	Siris	Fabaceae	March-October	Malkapur Block
13	*Alstonia scholaris*	Saptaparni	Apocynaceae	October-January	Krishak Bhavan
14	*Anogeissus latifolia*	Dhawada	Combretaceae	August-December	Malkapur Block
15	*Aristida funiculata*	Pandari Kusal	Gramineae	July-December	Shivani Block
16	*Aristida redacta*	Zadu gavat	Poaceae	August-November	Malkapur Block
17	*Artocarpus heterophyllus*	Fanas	Moraceae	March-April	C.R.S. Office
18	*Azadirachta indica*	Neem	Meliaceae	May-August	P.D.K.V.Campus
19	*Balanites aegyptiaca*	Hingan	Simaroubaceae	April-May	Babhulgaon Block
20	*Bauhinia racemosa*	Apta	Fabaceae	March- June	Western Block
21	*Bauhinia variegata*	Kanchan	Fabaceae	Apri-June	College Of Agriculture
22	*Buchanania lanzan*	Achar, Char	Anacardiaceae	April-June	Babhulgaon Block
23	*Butea monosperma*	Palas	Fabaceae	January-April	Watershed
24	*Caesalpinia crista*	Sagergoti	Fabaceae	April-June	Western

Sr. No	Latin name	Local Name	Family	Flowering and Fruiting Period	Location
25	*Caesalpinia coriaria*	Devi-Devi	Fabaceae	July-October	Departent Of Forestry
26	*Carissa carandas*	Karonda	Apocynaceae	May-Sept.	Department Of Horticulture
27	*Cassia fistula*	Amaltas	Leguminosae	March-April	Dr. P.D.K.V. Campus
28	*Cassia tora*	Tarota	Leguminosae	July-Sept.	Western Block
29	*Casuarina equisetifolia*	Saru	Casuarinaceae	October . November	Guddhi Block
30	*Ceiba pentandra*	Kapok	Bombacaceae	January-March	Department Of Forestry
31	*Cordia myxa*	Bhokar	Boraginaceae	March-May	Department Of A.H.D.S.
32	*Cuscuta reflexa*	Amarbel-Amarvel	Cuscutaceae	March-June	Babhulgoan Block
33	*Dalbergia latifolia*	Shisam	Leguminosae	December-April	Krishk Bhavan
34	*Dalbergia sissoo*	Sissoo	Papilionaceae	March-June	Guddhi Block
35	*Delonix regia*	Gulmohar	Leguminosae	April-May	C.R.S Office
36	*Dendrocalamus strictus*	Bans/ Bamboos	Poaceae	Gregarious flowering	Department Of Forestry
37	*Dichanthium annulatum*	Marwel	Poaceae	September-January	Shiver Block
38	*Digitaria ciliaris*	Shikari	Poaceae	August-December	Shivani Block
39	*Diospyros melanoxylon*	Tendu	Ebenaceae	April-June	Shivar Block
40	*Emblica officinalis*	Aonla,	Euphorbiaceae	March-May	Horticulture Depatment
41	*Eucalyptus tereticornis*	Nilgiri	Myrtaceae	May-June	C.R.S. Office
42	*Erythrina variegata*	Pangra	Fabaceae	May-June	Shard Sarover
43	*Limonia elephantum*	Kawat	Rutaceae	February-May	Malkapur Block
44	*Ficus benghalensis*	Wad	Moraceae	April-June	Malkapur Block
45	*Ficus glomerata*	Umber	Moraceae	January-July	Malkapur Block
46	*Ficus religiosa*	Pipal	Moraceae	April-May	Department Of A.H.D.S.

Sr. No	Latin name	Local Name	Family	Flowering and Fruiting Period	Location
47	*Gardenia lucida*	Dikamali	Rubiaceae	February-June.	C.R.S. Office
48	*Gliricida maculate*	Giripushp	Fabaceae	January-February	Department Of Forestry
49	*Gmelina arborea*	Siwan	Verbenaceae	February-April	Department Of Forestry
50	*Hardwickia binata*	*Anjan*	*Caesalpiniaceae*	*April-May*	C.R.S. Office
51	*Heteropogon contortus*	Kusali	Poaceae	June-October	Shard Sarover
52	*Holarrhena antidysenterica*	Indrajira/ Kuda	Apocynaceae	October-January	Western Block
53	*Holoptelea integrifolia*	Jungle Cork Tree	Ulmaceae	June-July	Department Of Forestry
54	*Jatropha curcas*	Jatropha	Euphorbiaceae	June-July	Depatment Of Forestry
55	*Lantana camera*	Ghaneri	Verbenaceae	August-November	Shivani Block
56	*Leucaena leucocephala*	Subabul	Mimosaceae	April-July	Malkapur Block
57	*Madhuca indica*	Mahua	Sapotaceae	February-April	Western Block
58	*Mangifera indica*	Amba	Anacardiaceae	March-June	Malkapur Block
59	*Melia azedarach*	*Bakan*	*Meliaceae*	*Maech-May*	Department Of Horticulture
60	*Mimusops hexandra*	*Khirni*	*Sapotaceae*	*March-May*	C.R.S. Office
61	*Moringa oleifera*	*Shevga*	*Moringaceae*	*February-March*	Department Of A.H.D.S.
62	*Mitragyna parvifolia*	Kalam	Rubiaceae	May-October	Department Of Horticulture
63	*Nyctanthes arbortristis*	Kharasli/ Parijatak	Oleaceae	August-November	Agriculture College
64	*Ocimum basilicum*	Rantulas	Lamiaceae	August-January	Department Of Horticulture
65	*Ougeinia dalbergioides*	Tiwas	Papilionaceae	February-July	Western Block
66	*Paspalum scrobiculatum*	Kunda	Poaceae	August-February	Shivani Block
67	*Phoenix acaulis*	Sindhi	Arecaceae	August- December	Shivani Block
68	*Pongamia pinnata*	Karanj	Leguminosae	April-July	Department Of Forestry
69	*Prosopis juliflora*	Vilayati babul	Leguminosae	April_July	Department Of Forestry

Sr. No	Latin name	Local Name	Family	Flowering and Fruiting Period	Location
70	*Pterocarpus marsupium*	Bija	Fabaceae	July-October	Malkapur Block
71	*Samanea saman*	Rain tree	Leguminosae	May-June	Babhulgaon Block
72	*Santalum album*	Chandan	Santalaceae	November-October	Department Of Entomology
73	*Sapindus lourifolisus*	Rhita	Sapindaceae	October-December	Department Of Forestry
74	*Schleichera oleosa*	Kusum	Sapindaceae	February-July	Shard Sarover
75	*Semecarpus anacardium*	Biba	Anacardiaceae	May - September	Malkapur Block
76	*Simarouba glauca*	Simaruba	Simaroubaceae	April-june	Department Of Forestry
77	*Soymida febrifuga*	Rohan	Meliaceae	May-August	Department Of Forestry
78	*Syzygium cumini*	Jamun	Myrtaceae	June-August	Western Block
79	*Tamarindus indica*	Chinch	Caesalpiniaceae	May-June	Department Of Horticulture
80	*Tectona grandis*	Sagwan	Verbenaceae	June-September	Department Of Forestry
81	*Terminalia arjuna*	Arjun	Combretaceae	April-July	Malkapur Block
82	*Terminalia bellerica*	Beheda	Combretaceae	April-November	Shivar Block
83	*Terminalia catappa*	*Badam*	Combretaceae	April	C.R.S.Office
84	*Terminalia chebula*	Hirda	Combretaceae	April-October	Babhulgaon Block
85	*Thevetia peruviana*	Bitti	Apocynaceae	April-June	Dsw Office
86	*Tinospora cordifolia*	Gudvel	Menispermaceae	April-june	Department of Horticulture
87	*Vitex negundo*	Nirgudi	Lamiaceae	March-June	Shivani block
88	*Xanthium strumarium*	Gokru	Compositae	August-September	Guddhi Block
89	*Ziziphus mauritiana*	Ber/Bor	Rhamnaceae	May-December	Department Of Horticulture

Thus results of the study revealed 89 plant species belonging to 68 genera and 35 families. These were enumerated systematically according to Bentham and Hooker's system of classification. Of the total species, dicots are represented under 33 families, 68 genera and 82 species. Monocots are represented by 2 families, 6 genera and 7 species (Fig. 1 and Fig. 2).

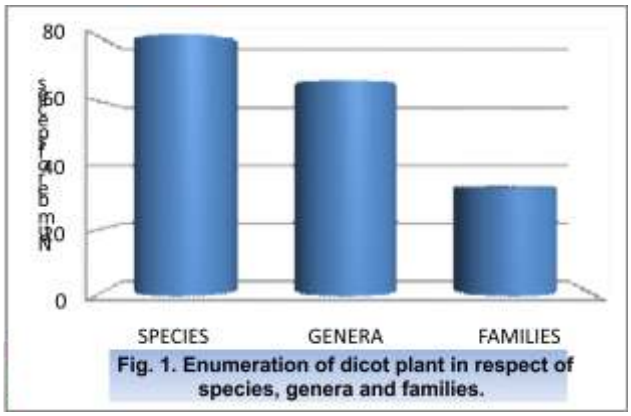

Fig. 1. Enumeration of dicot plant in respect of species, genera and families.

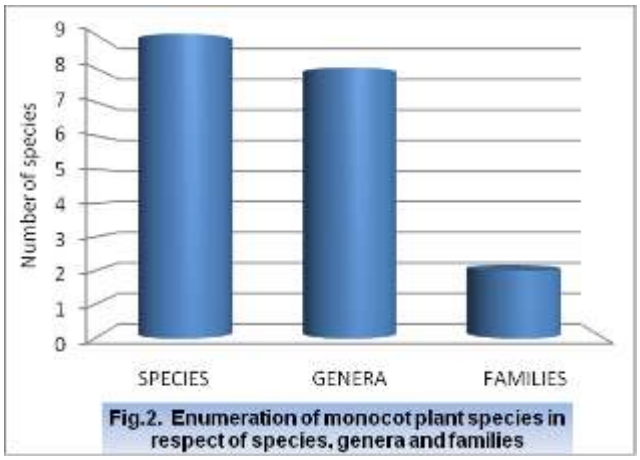

Fig.2. Enumeration of monocot plant species in respect of species, genera and families

Dicots constitute 92.13 percent of the total species; monocots constitute 7.87 percent of the total species (Fig. 3). The Twelve predominant families among dicots are Fabaceae (6 species), followed by Leguminosae (5), Combretaceae (4), Moraceae (3), Simaroubaceae (3), Apocynaceae (3), Mimosaceae (3), Meliaceae (3), Anacardiaceae (2), Rubiaceae (2), Papilionaceae (2), Euphorbiaceae (2), Mytraceae (2) Rutaceae (2),Sapotaceae (2) , Sapindaceae (2), Lamiaceae (2),and Caesalpiniaceae (2).

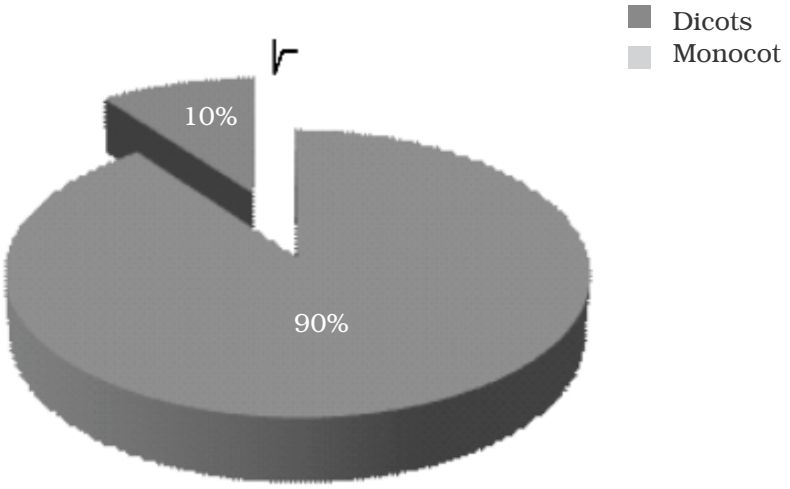

Fig. 3. Percentage of species in monocot and dicot.

The least represented families are Amaranthaceae, Acanthaceae, Cuscutaceae, Oleaceae, Bombacaceae, Casuarinaceae Malvaceae, Menispermaceae, Aceraceae, Compositae, Santalaceae Rhamnaceae Ebenaceae, Boraginaceae, Meliaceae Gramineae and Ulmaceae. Among the monocots, Poaceae is the largest family with 7 species. Similar type of work was done by various workers in the field of phytodiversity. Brandis (1906) enumerated about 4400 species of trees, shrubs, climbers and bamboos found in British Indian Empire. Rao and Razi (1981) carried out botanical exploration of Mysore district and described 1601 species of flowering plants belonging to 170 families and 778 genera. Manilal (1988) did a remarkable work by studying the flora of Silent Valley and recorded total of 966 species of angiosperms belonging to 599 genera and 134 families. Uniyal and Rao (1993) explored the plant wealth of Rajaji National Sanctuary in Uttar Pradesh and reported total 360 plant species including medicinal and aromatic plants. Panwar and Chakravarty 2010 reported 27 to 38 species in small and medium homegrdens in West Bengal. Deshmukh et al. 2016 carried out species diversity in patur (Akola) and found 13 agroforestry tree species on farm lands. Rajendran et al. (2001) had undertaken an ethno-botanical survey for collection of plant samples which are used as ethno-medicinal by valaya tribals of Seithur district hills of Virudunagar Forest division. Hande et al. (2014). undertaken the survey in Katepurna wildlife sanctuary of Akola wildlife division, Maharashtra and recorded 94 plant species belonging to 76 genera and 36 families.

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