



Research Paper

**FLORISTIC SURVEY OF MONOCOTYLEDONOUS PLANTS FROM MAN
TEHSIL OF SATARA DISTRICT (MAHARASHTRA) INDIA**

Kamble, V.V. and R.B.Yele

Department of Botany,
Dahiwadi College Dahiwadi,
Taluka- Man, District- Satara, Maharashtra State,
India.

Abstract

The present study was carried out for floristic survey of monocotyledonous plants in the drought prone area of eastern region from Satara district during June 2018 to February 2020. The Man tehsil is located between 17^o42' 14.4216" North latitude and 74^o.32' 41^o5248" East longitude. The total geographical area of the tehsil is 556 square miles (1,440 km²). The maximum temperature ranged 38^oC to 42^o C in summer and 25^o C to 28^o C in winter season. The total average rainfall is 473 mm, Due to continuous drought prone conditions of the area and adverse geographical conditions plant wealth are very poorly known. The angiosperms are the largest, highly diversified, and most successful major group forming the dominant vegetation on the earth. They occupy almost every habitat on earth, from deserts to high mountain peaks and from freshwater to marine water ecosystems. The angiosperms have traditionally been divided into two groups, the monocotyledons (monocots) and the dicotyledons (dicots), An important chore of taxonomist is to prepare a checklist of plants. The work is based on collection of information from regional floras and databases. The vegetation is mixed deciduous type. Twenty four extensive plant surveys were conducted in remote corners of tehsil and diversity among the species of monocot specimens were studied. Based on the present study the area is represented by 19 families, 62 genera and 68 species of monocots. Poaceae was the dominant family, followed by Commelinaceae and Araceae.

Key words: Floristic, Monocotyledonous plants, Man, Satara, Maharashtra.

INTRODUCTION

India is having richest biodiversity in the world. India has 12 biogeographical provinces, 5 biomes and 3 bioregion domains (Cox & Moore, 1993) [7]. The country

supports a diverse array of habitats or ecosystems such as forests, grasslands, wetlands, coastal, marine and desert and each with rich and unique floristic diversity. The Flora of India is consists of 47513 plant species of all groups and 18117 flowering plant species (Arisdason and Lakshminarasimhan, 2016) [2]. The area of the country represents about 2.4% of the world's total landmass, it harbours a total of 47,513 plant species (Chapman A.D., 2009; Singh & Dash, 2014) [5] out of them about 0.4 million species known in the world, representing about 11.4% of world's flora. About 28% of plants present in India are endemic to the country. There are 17,527 species, 296 subspecies, 2215 varieties, 33 sub varieties and 70 forma, altogether 20,141 taxa of angiosperms under 2991 genera and 251 families in India, representing approximately 7% of the described species in the world (Karthikeyan, 2009) [13]. However, the recent estimate accounts a total of 17926 species of angiosperms in the country (Singh & al., 2014) [19]. Family Poaceae is the largest in India being represented by 263 genera and 1291 species followed by Orchidaceae (184/1229), Floristic diversity can be defined as the variety and variability of plants in a particular region. It refers to the number of types or taxa in a given region or group. Floristic diversity can be measured at any level from overall global diversity to ecosystem, community up to species level. Occurrence of some obnoxious grasses Bor N.L. (1960) [3] was also observed.

The term diversity means different and floristic diversity refers to all taxa of plants of the study area at a stipulated time. (Rao R.R. 1997). [15] The present survey deals with the floristic diversity of Man tehsil of Satara district, i.e., enumeration of monocot species in the study area. The present study attempts to highlight the diversity of monocot plant resource in a conservation perspective has and to document the diversity of monocot flora in Man tehsil. The survey was focused on only on the flowering plants especially monocotyledonous plants of the Man tehsil, which form an important part of vegetation, food, fodder and contribute significantly to the diversity of monocot and ultimately angiosperm flora.

MATERIALS AND METHODS:

Study area:

The present study was conducted in Man tehsil located as Eastern region of Satara district at 17°42' 14.4216" North latitude and 74°32' 41.05248" East longitude having a total area of 1,440 km². The temperature has a relatively high range between 15 °C to 45 °C. Summer in Man is comparatively hot, and dry, compared to neighboring

tehsils. Maximum temperatures exceed 40 °C every summer and typically range between 38 and 45 °C. Lows during winter season are around 25 °C to 28 °C.

Frequent Survey and exploration were undertaken covering the growth during rainy, winter & summer in 2018 to 2020. The plant samples were collected based on morphological and reproductive characters. List of species from Man tehsil was prepared by referring all the available literature. Identification of most of the specimens was confirmed with help of Hooker's Flora of British India (1875), [10] The Flora Of The Presidency Of Bombay Vol III T. Cooke (1908 and 1958, Repr.ed.), [6] Santapau (Flora of Khandala ed. 3, 1966), [22] Saldanha and Nicolson (Flora of Hassan District, 1976), [21] and National, state and regional floras. [11], [12], [14], [18], [20], [23], and [24].

RESULTS:

Collection of some monocot species belonging to families Araceae, Hydrocharitaceae, Zannichelliaceae, Dioscoreaceae, Colchicaceae, Xanthorrhoeaceae, Amaryllidaceae, Alliaceae, Asparagaceae, Arecaceae, Commelinaceae, Strelitziaceae, Heliconiaceae, Musaceae, Cannaceae, Zingiberaceae, Typhaceae, Cyperaceae and Poaceae. Authentication has been done with the help of floras and available literatures.

The results depicted in Table No. 1 indicated that there was diversity in the monocot plants in the study area. Total 68 monocot plants species were recorded belongs to 19 families. All the species classified in 62 genera.

Poaceae was the largest family with 22 species, Commelinaceae represented by 11 species with second largest number and it was followed by 08 species from Araceae.

The maximum genera represented from Commelinaceae were *Commelina* and *Cyanotis* with 3 species each. It is followed by *Pennisetum* from Poaceae with 2 species and all remaining 59 genera were represented by only single species each.

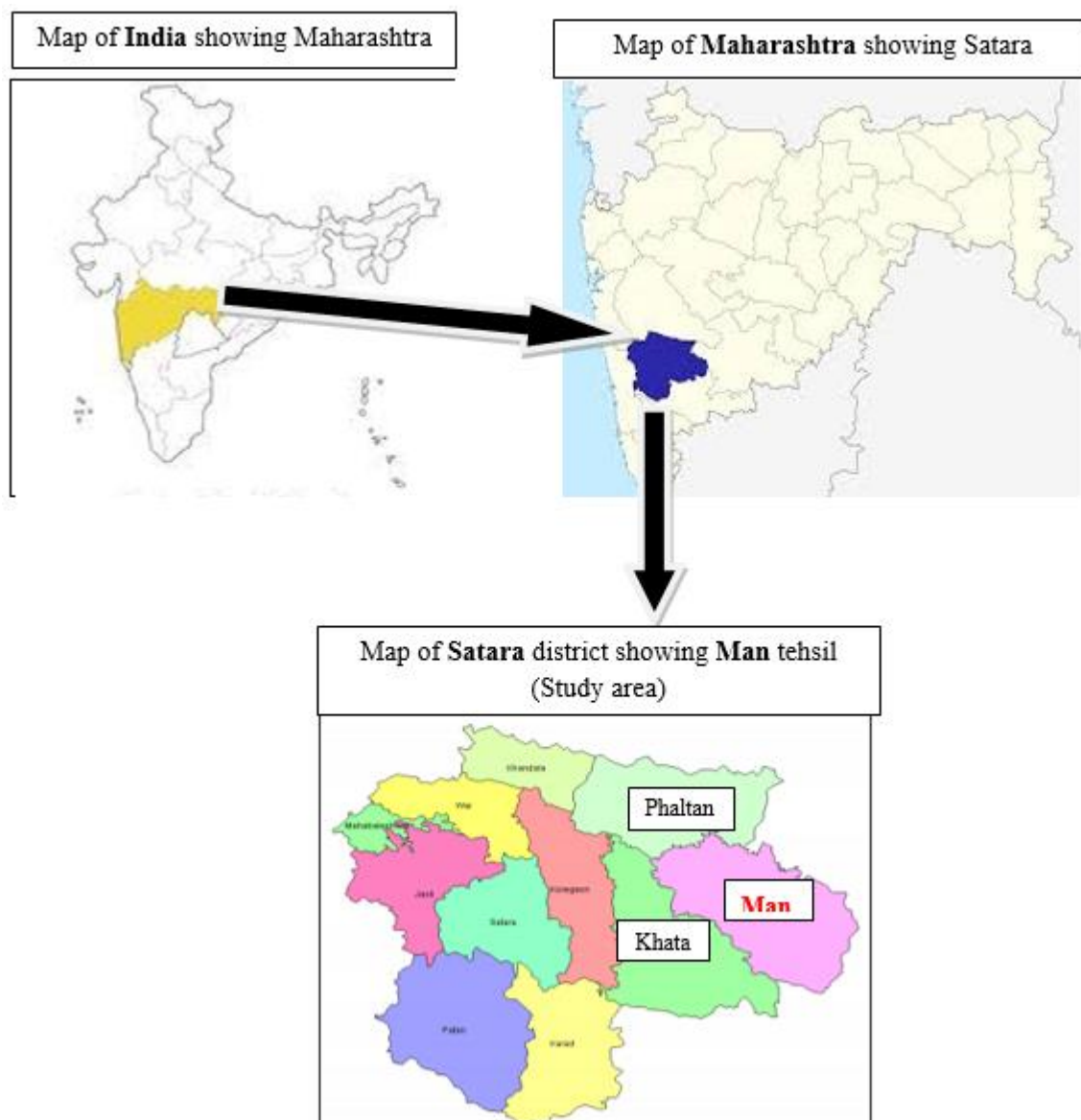


Fig. 1. Location map of study area

Table 1. Checklist of monocot plant species in Man tehsil of Satara district (MH) India

Sr. No.	Botanical name	Family
1	<i>Dieffenbachia seguine</i> (Jacq.) Schott	Araceae
2	<i>Aglaonema commutatum</i> Schott.	Araceae
3	<i>Colocasia esculenta</i> L.	Araceae
4	<i>Caladium bicolor</i> Alton.	Araceae
5	<i>Anthurium andraeanum</i> Linden	Araceae
6	<i>Alocasia cuculata</i> L.	Araceae
7	<i>Monstera deliciosa</i> Liebm.	Araceae

8	<i>Syngonium auritum</i> Schott.	Araceae
9	<i>Hydrilla verticillata</i> (L.F.) Royle	Hydrocharitaceae
10	<i>Zannichellia palustris</i> L.	Zannichelliaceae
11	<i>Dioscoria alata</i> Schott	Dioscoreaceae
12	<i>Iphigenia indica</i> L.	Colchicaceae
13	<i>Aloe vera</i> L. (Burm.)	Xanthorrhoeaceae
14	<i>Crinum latifolium</i> L.	Amaryllidaceae
15	<i>Allium cepa</i> L.	Alliaceae
16	<i>Allium sativum</i> L.	Alliaceae
17	<i>Agave cantala</i> (Haw.) Roxb.	Asparagaceae
18	<i>Asparagus racemosus</i> Willd.	Asparagaceae
19	<i>Dracaena deremensis</i> Eng.	Asparagaceae
20	<i>Polianthes tuberosa</i> L.	Asparagaceae
21	<i>Sansevieria hyacinthoides</i> L.	Asparagaceae
22	<i>Caryota urens</i> L.	Arecaceae
23	<i>Cocos nucifera</i> L.	Arecaceae
24	<i>Phoenix sylvestris</i> L. (Roxb.)	Arecaceae
25	<i>Roystonea regia</i> Kunth.	Arecaceae
26	<i>Commelina benghalensis</i> Liebm.	Commelinaceae
27	<i>Commelina diffusa</i> Burm. F.	Commelinaceae
28	<i>Commelina erecta</i> L.	Commelinaceae
29	<i>Cyanotis cristata</i> L. D. don.	Commelinaceae
30	<i>Cyanotis tuberosa</i> (Roxb.) Schult.	Commelinaceae
31	<i>Cyanotis fasciculata</i> Heyne ex Roth.	Commelinaceae
32	<i>Tonningia axillaris</i> Roxb.	Commelinaceae
33	<i>Rhoeo discolor</i> L.	Commelinaceae
34	<i>Tradescantia pallida</i> (Rose) D.R.Hunt.	Commelinaceae
35	<i>Trachycarpus fortunei</i> H. Wendl.	Commelinaceae
36	<i>Zebrina pendula</i> (Schinz) D. R. Hunt	Commelinaceae
37	<i>Ravenala madagascariensis</i> Sonn.	Strelitziaceae
38	<i>Heliconia bihai</i> Burm. F.	Heliconiaceae
39	<i>Musa paradisiaca</i> L.	Musaceae

40	<i>Canna indica</i> L.	Cannaceae
41	<i>Curcuma longa</i> L.	Zingiberaceae
42	<i>Elettaria cardamomum</i> (Linnaeus) Maton	Zingiberaceae
43	<i>Zinziber officinale</i> (<u>Rose</u>) <u>D.R.Hunt.</u>	Zingiberaceae
44	<i>Typha angustifolia</i> L.	Typhaceae
45	<i>Fimbristylis dichotoma</i> . L. (Vahl.)	Cyperaceae
46	<i>Kyllinga bulbosa</i> Rottb.	Cyperaceae
47	<i>Arachne racemosa</i> Wright & Arn.	Poaceae
48	<i>Alloteropsis cimicina</i> C. Pres	Poaceae
49	<i>Apluda mutica</i> L.	Poaceae
50	<i>Aristida funiculata</i> L.	Poaceae
51	<i>Arthraxon hispidus</i> Thunb.	Poaceae
52	<i>Sporobolus subtilis</i> R. Br.	Poaceae
53	<i>Arundo donax</i> L.	Poaceae
54	<i>Bambusa arundinacea</i> L. (Voss.)	Poaceae
55	<i>Chloris barbata</i> Sw.	Poaceae
56	<i>Chrysopogon fulvus</i> Spreng.	Poaceae
57	<i>Bulbosylis barbata</i> Sw.	Poaceae
58	<i>Cyperus rotundus</i> L.	Poaceae
59	<i>Zea mays</i> L.	Poaceae
60	<i>Triticum aestivum</i> L.	Poaceae
61	<i>Sorghum vulgare</i> Moench.	Poaceae
62	<i>Saccharum officinarum</i> L	Poaceae
63	<i>Pennesetum purpureum</i> Schum. Beskr.	Poaceae
64	<i>Pennesetum glaucum</i> (L) R. Br.	Poaceae
65	<i>Paspalum vaginatum</i> Swart.	Poaceae
66	<i>Heteropogon contortus</i> L.	Poaceae
67	<i>Cyanodon dactylon</i> L.	Poaceae
68	<i>Cymbopogon citratus</i> (DC.) Stapf	Poaceae

Fig. 2. Family wise distribution of monocot species in Man tehsil of Satara district

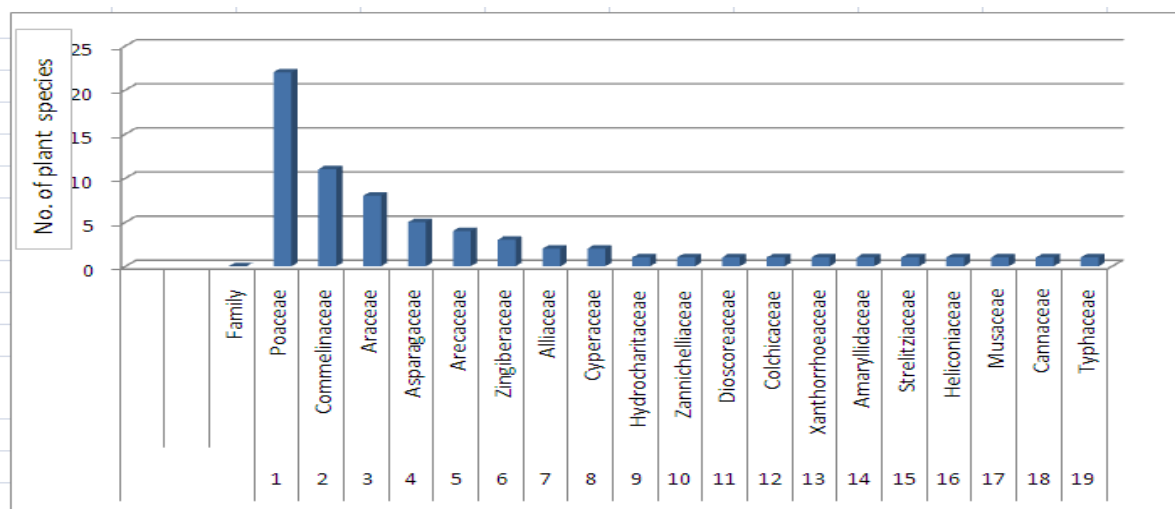
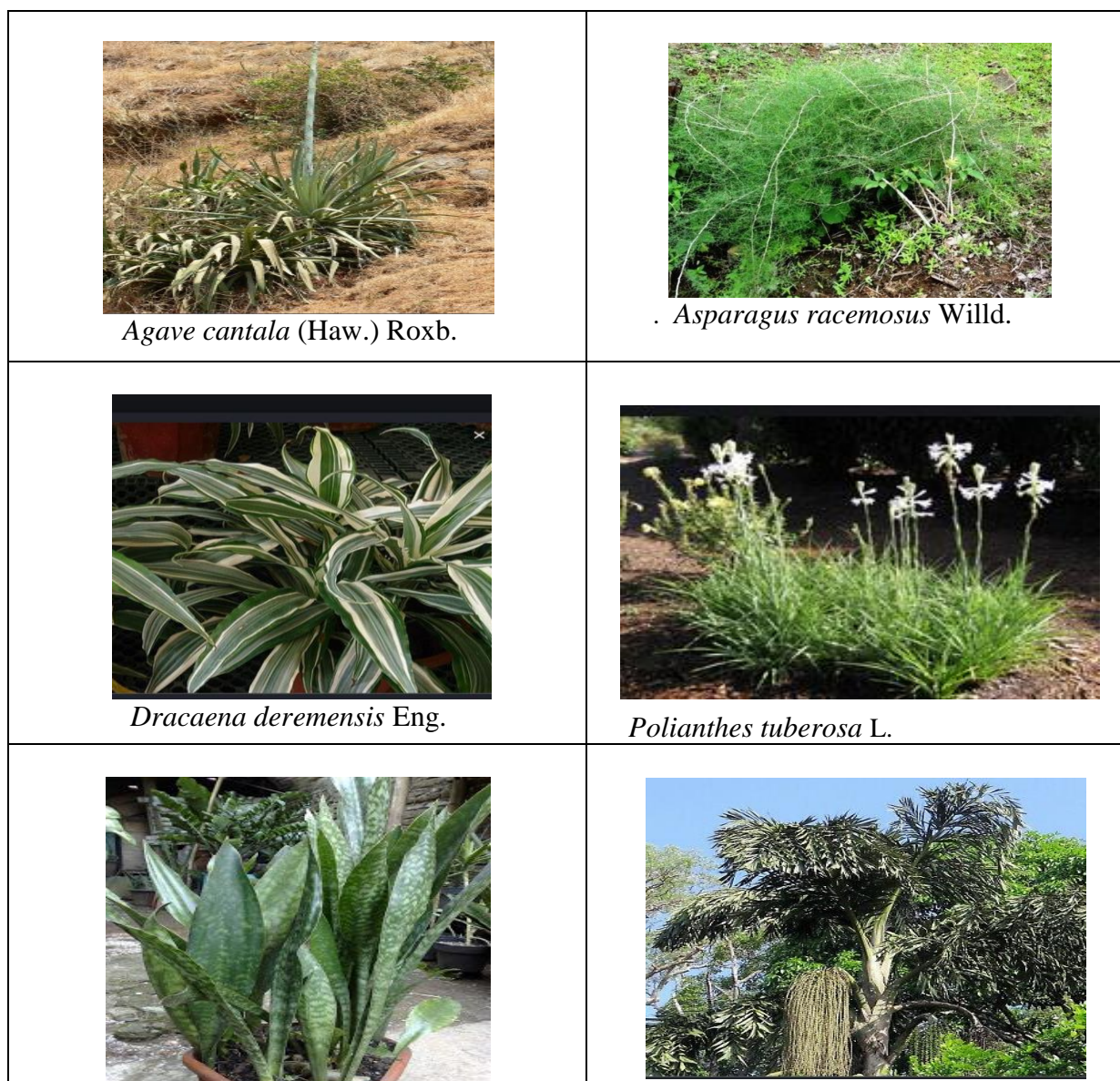


Plate I. The photographs of monocots captured during the survey






<p><i>Sansevieria hyacinthoides</i> L.</p>	<p><i>Caryota urens</i> L.</p>
 <p><i>Cocos nucifera</i> L.</p>	 <p><i>Phoenix sylvestris</i> L. (Roxb.)</p>

Plate II. The photographs of monocots captured during the survey

 <p><i>Apluda mutica</i> L.</p>	 <p><i>Aristida funiculata</i> L.</p>
 <p><i>Arthraxon hispidus</i> Thunb.</p>	 <p><i>Sporobolus subtilis</i> R. Br.</p>
 <p><i>Arundo donax</i> L.</p>	 <p><i>Bambusa arundinacea</i> L. (Voss.)</p>



Chloris barbata Sw.



Chrysopogon fulvus Spreng

DISCUSSION:

Hande *et al.*, (2014) [9] recorded 94 plant species with 36 families and 76 genera in Katepurna wildlife sanctuary of Akola Wildlife Division, Maharashtra. Out of 94 species 79 were dicotyledons plants with 33 families and 63 genera. However, 15 species were belonging 3 families with 13 genera of monocot.

The results show corroboration with Rathod (2014) [17] reported where Poaceae was reported dominant family according to species number from Sangamner Tehsil of Ahmednagar District. The results are in agreement with the observations made by Ganorkar and Kshirsagar (2013) [8] has recorded rare *Roystonea regia* (H.B. and K.) F in their survey of Shirur area, whereas *Cocos nucifera* was recorded as rare but this study not corroborating with the present work.

Aher, (2015) [1] investigated dominant family according to species number from Parner Tahsil of Ahmednagar District, Maharashtra (India) *from monocots was, Poaceae.*

Rathod, (2012) [16] recorded highest density in Patnadevi forest maximum total density recorded for herb from monocot was *Asparagus racemosus*. The recorded highest density for herb species is not support with present work.

M. Bhaumik (2014) [4] in his studies on An Account of monocotyledonous plants from Dihang Dibang Biosphere Reserve, Arunachal Pradesh, India. The dominant families by number of genera are represented by Poaceae (55 genera), Cyperaceae (14 genera), Commelinaceae (9 genera), Zingiberaceae (9 genera) and Araceae (8 genera); it was in agreement with the present study.

CONCLUSION:

1. Current study is based on taxonomic view of monocots of the different seasons from the Man tehsil of Satara district, which provides a preliminary checklist of plants.

2. It provides information about diversity and adaptability of the Monocots of Man tehsil.
3. It will also be useful in suggesting suitable staple food providing monocots from the study area.

ACKNOWLEDGEMENT:

We take an opportunity to express my gratitude to several well-wishers who have been instrumental in making this research work successful and accurate.

We have to express my sincere gratitude towards Prin. Dr. B. T. Jadhav, Dahiwadi College Dahiwadi for continuous encouragement and motivation in research and providing financial assistance form research corpus of Dahiwadi College Dahiwadi.

We wish to thank Dr. Anil Chopade, Department of Chemistry, Dr. Anil Jagtap, Dr. Suhas Kamble, Mr. Atul Dalvi and Miss. Tejashri Satre Department of Botany and Mr. Waghare V. S. Librarian Dahiwadi College Dahiwadi for their cooperation during work.

REFERENCES:

- [1] Aher, S., 2015, Floristic diversity assessment of Parner Tahsil, Maharashtra (India). Indian J. Applied & Pure Bio.; 30 (2):123-130.
- [2] Arisdason W, Lakshminarasimhan P. 2015-16. Status plant diversity in India: An overview. Central national herbarium, Botanical Survey of India, Howrah. Retrieved from <http://www.bsienviis.nic.in/Database/Status of plant Diversity in India 17566.aspx>,
- [3] Bor N., 1960, The grasses of Burma Ceylon, India and Pakistan (excluding Bambuseae). Pergamon Press, Oxford.
- [4] Bhaumik, M., 2014, Flora of Dihang Dibang Biosphere Reserve (Monocotyledons). Arunachal Pradesh, India. Indian Forester, 140 (8) : 801-806.
- [5] Chapman, A., 2009, Number of living species in Australia and the world (2nd edition) Canberra: Australian Biological Resources Study. pp 1-80.
- [6] Cooke, T. (1908 and 1958, Repr.ed.), The Flora Of The Presidency Of Bombay Vol. III.
- [7] Cox, C., and Moore, P., 1993, Biogeography: an ecological and evolutionary approach (5th edn). Oxford: Blackwell Scientific Publications. x + 326 pp. f 16.50 paper.
- [8] Ganorkar, R., and Kshirsagar A., 2013, Floristic Study of Shirur Region Pune, Maharashtra, India *International Research Journal of Biological Sciences* Vol. 2(5),

- 1-6,
- [9] Hande, N., Nimkar, A., Taide, Y., and Mankar, R, 2014, Floristic diversity of the Katepurna Wildlife sanctuary of Akola Wildlife Division, Maharashtra). Indian Forester, 140.
- [10] Hooker, J., 1875, The Flora of British India Vol. I-VII.
- [11] Hooker, J., 1888 – 1897. The Flora of British India vol. V – VII. L. Reeve and Co. Henrietta street, Covent Garden, London.
- [12] Ingalhalhikar, S., 2001, 210 pp Flowers of Sahyadri.
- [13] Karthikeyan, S. 2009. Flowering plants of India in 19th and 21st Centuries – A comparison. In: Krishnan, S. & Bhat, D.J. (Eds.), Plant and fungal biodiversity and bioprospecting. Goa University, Goa. pp. 19–30..
- [14] Potdar, G., Salunkhe, C., and Yadav S., 2012, Grasses of Maharashtra.
- [15] Rao, R., (1997) Proc. Indian natn. Sci. Acad. B63 pp. 127-138
- [16] Rathod, M., 2012, Vegetation analysis at different elevation ranges of Patanadevi forest, Maharashtra, India. *Bionano Frontier*. 5(2-2): 92-95.
- [17] Rathod, M., 2014, Vegetative species community, richness and diversity in Patnadevi forest, Maharashtra, India. Journal of environmental research and development. 8(3A): 805.
- [18] Singh, N., and Karthikeyan, 2000 (eds). Flora of Maharashtra State: Monocotyledons Vol. 2 Botanical Survey of India, Calcutta.: 1080 pp.
- [19] Singh, P. & Dash, S., 2014, *Plant Discoveries 2013 – New Genera, Species and New Records*. Botanical Survey of India, Kolkata.
- [20] Sharma, B., Karthikeyan, S., Singh, N., 1996, Flora of Maharashtra State: Monocotyledones, Botanical Survey of India.
- [21] Saldanha, and Nicolson 1976, (Flora of Hassan District,).
- [22] Santapau, 1966, (Flora of Khandala ed. 3,).
- [23] Singh, N., and Karthikeyan, 2000 (eds). Flora of Maharashtra State: Monocotyledons Vol. 2 Botanical Survey of India, Calcutta.: 1080 pp.
- [24] Yadav, S., and Sardesai, M.,. Flora of Kolhapur District. Pub. Shivaji Uni. Kolhapur 2002: pp 644.