

# GRASSES DIVERSITY OF BALAGHAT DISTRICT, CENTRAL INDIA, MADHYA PRADESH, WITH SPECIAL REFERENCE TO THEIR UTILITY

Anil Kumar Dashahre<sup>1</sup>, Arvind Wasnik<sup>2</sup>, Yogesh Bisen<sup>3</sup>, Hari Shankar Yadav<sup>4</sup>

<sup>1</sup>Biologist, National Tiger Conservation Authority Regional Office Ravinagar, Nagpur, Maharashtra- 440001

<sup>2</sup>Assistant Professor, Department of Botany, JSTPG College Balaghat- 481001, Madhya Pradesh-481001.

<sup>3</sup>Research Scholar, Department of P.G studies and research in biological Science, Rani Durgavati University Jabalpur, Madhya Pradesh-482001.

<sup>4</sup>Teacher, Higher secondary School Nikkum, Birsa, Balaghat- 481051

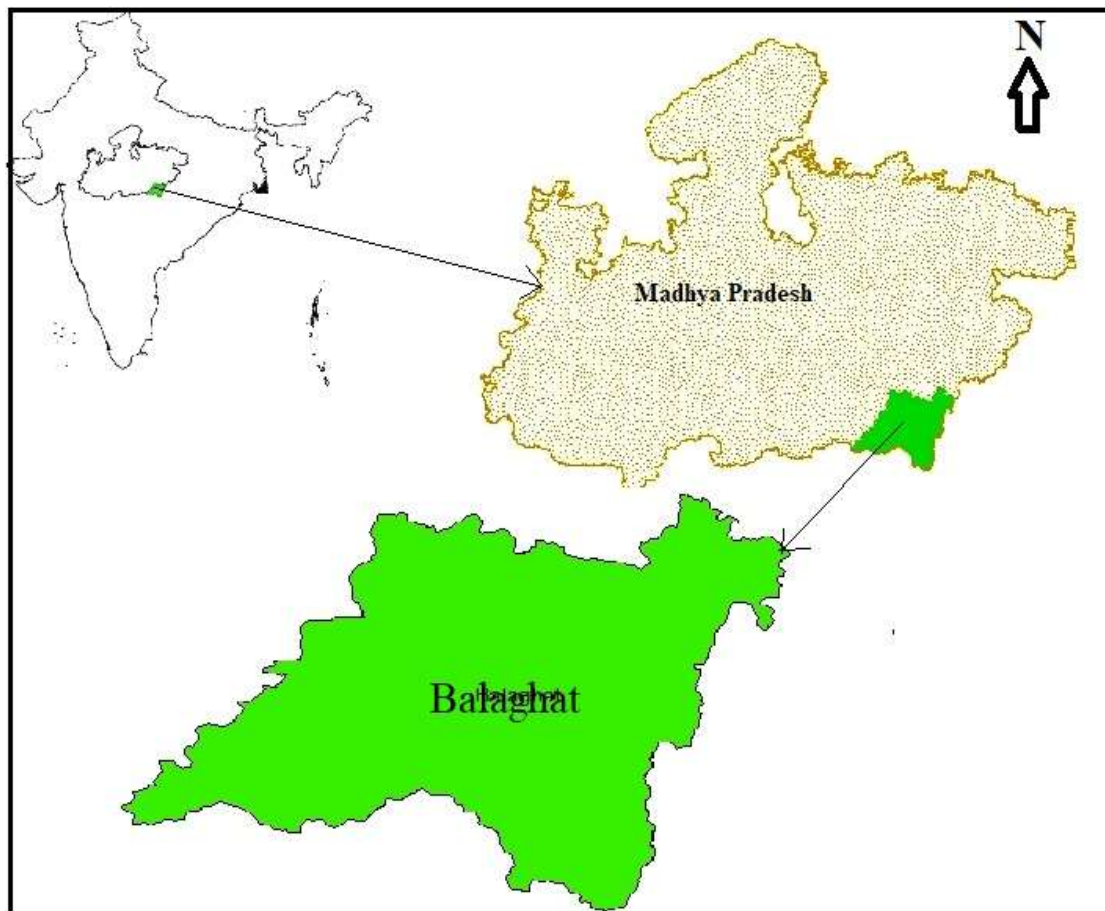
**Abstract:** Within the wide diversity of flowering plants ‘Grasses’ are the one which can be found anywhere with great abundance. Grasses are the members of Poaceae (Gramineae) family which are the most vital part in our life as food, medicine, livestock and wild animals-fodder and many different things. This is the first study to documents data of grasses and sedges of entire Balaghat district Madhya Pradesh state, India. The present paper describes the rich grass and sedges diversity of (n=150) species of Balaghat district Madhya Pradesh. Where the dominant species are like *Heteropogon controtus*, *Dichanthium annulatum*, *Themeda triandra*, *Ischemum indicum*, *Apluda mutica*, *Themeda quadrangularis*, *Cynodon dactylon*, *Eragrostis* species etc. This study help for field workers, research scholars, teachers and forest officers feel the need of a hand book with simple identification key and brief description of species for their future reference.

**Keywords:** Grass diversity, Phenology, Utilities, Balaghat district.

**Introduction-** Poaceae is an enormous and about universal group of monocotyledonous blooming plants known as grasses. Poaceae incorporates the cereal grasses, bamboos and the grasses of common grassland and developed gardens and pasture. The grass family is one of the most broadly appropriated and abundant gatherings of plants on the Earth. Grasses are found on pretty much every mainland and are missing just from Antarctica. As indicated by various authors there might be 780 genera and around 12,000 types of grasses on the planet and involves the fifth-biggest plant family, following the Asteraceae, Orchidaceae, Fabaceae and Rubiaceae (Jain, 1986) [8], (Clayton et al., 2012) [4]. A Handbook of some South Indian Grasses (Acharyar and Tadulinga, 1921) [1], The Bombay Grasses (Blatter, 1935) [2], The Grasses of Burma, Ceylon, India and Pakistan (Bor, 1960) [3], A rundown of the grasses of N. W. India, indigenous and developed (Duthie, 1883) [6], The Grass Cover of India (Dabadghao and Shankarnarayan, 1973) [5], Grasses of Bihar, Orissa and West Bengal (Jain et al., 1975) [7], The Grass greenery of India (Jain, 1986) [8], Grasses of North-Eastern India (Shukla, 1996) [14], Important grasses of Eastern Ghats (Moulik, 2000) [9], Grasses and its decent variety in Gujarat state (Parmar et al., 2012) [11] and Grasses and their Varieties in Indian Literature (Sheshadri, 2013) [13] are eminent work on Indian grasses. Grasses of Madhya Pradesh (Roy, 1984) [12].

**Material and method- Study Area** – Balaghat district is situated in the southern part of Jabalpur division of Madhya Pradesh and involves the south eastern locale of the Satpura and upper Wainganga valley. The region ranges over degree from 21° 19’ to 22° 24’ North and 79° 31’ to 81° 3’ east. It is limited by Mandla area of Madhya Pradesh toward the North, Dindhori locale toward the Northwest, Rajanandgaon region of Chhattisgarh condition of the east, Gondia and Bhandara district of Maharashtra territory of South and Seoni district of Madhya Pradesh toward the West. The Balaghat district is divided in two division’s viz. North Balaghat and South Balaghat, the areas which are rich in floral as well as faunal diversity.

**Field survey-** Selected various study areas for the collection of grasses, and we collected various grass and sedges species in wild (Forest), agriculture land, aquatic land and gardens in Balaghat district. The main aim of the survey was to collect the information on grasses and sedges. We also captured photographs and collected specimen of grasses and sedges species from the different region of Balaghat district during the year 2008 to 2015. The identification was also based on literature study ( Moulik (1997) [10] and Roy, (1984) [13], flora of grasses in Madhya Pradesh.). Valuable information regarding medicinal uses was collected on the basis of interviews with experienced people of various communities, local medicine men (Vaidya) and old members and also consulting people.



**Fig:1- Map showing Balaghat district in Madhya Pradesh india**

**Result and Discussion-** The present study investigated (N=150) species of grass (*Poaceae*) is from the Balaghat district Madhya Pradesh. Grasses are economically the most important group of plants and useful to various life forms detailed and illustrated accounts of grasses, sedges with different phenology and their utilizations recorded during work (Table-1). So far there is no detailed account of grasses of this district with keys and description of plants. Therefore field workers, research scholars, teachers and forest officers feel the need of a hand book with simple identification key and brief description of species for their future reference. So the author tried to address the same. *Poaceae* is the largest family of flowering plants in our country. The present work is the first detailed work on grasses in Balaghat (Madhya Pradesh).

**Table-1- Diversity of Grass and sedges of Balaghat district Madhya Pradesh:**

<u>Sr.No.</u>	<u>Grasses and sedges Name</u>	<u>(Flowering &amp; fruiting).</u>	<u>Utilities</u>
1	<i>Alloteropsis cimicina</i> (L.) Stapf	July-Nov.	FO
2	<i>Andropogon muricatus</i> (Steud.)	Aug-Nov.	FO and M
3	<i>Andropogon nardoide</i> (L.)	Aug- Dec.	FO
4	<i>Apluda mutica</i> (L.)	Sep-Nov.	FO and M
5	<i>Arachne racemosa</i> (Heyne) Ohwi	Jul – Oct	FO
6	<i>Aristida funiculata</i> Trin. & Rupr.	Oct. - April	FO
7	<i>Aristida hystrix</i> L.f.	June-Dec.	FO
8	<i>Aristida redacta</i> Stapf.	Sept.–Dec.	FO
9	<i>Aristida setacea</i> Retz.	Nov-Feb.	FO and O
10	<i>Arthroxon lancifolius</i> (Trin.)Hochst.	July-Nov.	FO
11	<i>Arthroxon prionodes</i> (steud.) Dandy	Aug-Dec.	FO
12	<i>Arthroxon quartinianus</i> (A. Rich.) Nash.	Sep-Dec.	FO
13	<i>Bambusa arundinaceae</i> (Retz.) Willd.	Not seen	M and O
14	<i>Bambusa balcooa</i> Roxb.	Not seen	O
15	<i>Bambusa nana</i> Roxb.	Not seen	O

16	<i>Bambusa polymorpha</i> Munro.	Not seen	O
17	<i>Bambusa teres</i> Ham. ex Wall	Not seen	O
18	<i>Bambusa tulda</i> Roxb.	Not seen	M and O
19	<i>Bambusa vulgaris</i> Schrader.	Not seen	O
20	<i>Bothriochloa compressa</i> (Hook.f.) Henrard	July-Aug.	FO
21	<i>Bothriochloa glabra</i> (Roxb.) A. Camus	Aug-Dec.	FO
22	<i>Bothriochloa intermedia</i> (R. Br.) A. Camus.	Aug-Jun	FO
23	<i>Bothriochloa kuntzeana</i> (Hack.) Henr.	Aug-Dec.	FO
24	<i>Bothriochloa odorata</i> (Lisboa) A. Camus	Aug.-Feb.	FO
25	<i>Bothriochloa pertusa</i> (L.) A. Camus	Year	FO and M
26	<i>Brachiaria eruciformis</i> (J.E.Smith) Griseb.	Dec.-March	FO
27	<i>Brachiaria ramosa</i> (L.) Stapf	July-Oct.	FO
28	<i>Brachiaria reptans</i> (L.) Gard. & Hubbard	June-Oct.	FO and M
29	<i>Capillipedium assimile</i> (Steud.) A. Camus	July-Dec & March-Jun.	FO
30	<i>Chionachne koenigii</i> (Spreng.) Thw.	July-Oct.	FO
31	<i>Chloris barbata</i> Swartz.	Aug- Jan.	FO
32	<i>Chloris dolichostachya</i> (Lagasca.)	Aug-Jan.	FO
33	<i>Chloris virgata</i> (Swartz.)	Aug-Dec.	FO
34	<i>Chrysopogon aciculatus</i> (Retz.) Trin.	Jun-Oct.	FO
35	<i>Chrysopogon fulvus</i> (Spreng.) Chiov.	Aug - Nov.	FO
36	<i>Coix gigantea</i> Koen. ex Roxb.	Aug.-March	FO
37	<i>Coixlacryma-jobi</i> L.	Sept-Dec.	FO and O
38	<i>Cymbopogon citratus</i> (Roxb.) Wats.	July- Nov.	M and O
39	<i>Cynodon dactylon</i> (L.) Pers.	Throughout the year.	FO and M
40	<i>Cyperous difformis</i>	Aug-Nov.	FO and M
41	<i>Cyperus alulatus</i>	Aug-Nov.	Not Known
42	<i>Cyperus elusoides</i>	Aug-Nov.	FO and M
43	<i>Cyperus Peniceous</i>	Aug-Nov.	Not Known
44	<i>Cyperus rotendes</i> L.	Sep-Dec.	FO and M
45	<i>Cyperus Sanguialentus</i>	Aug-Nov.	FO and M
46	<i>Cyprous pengoerri</i> Rottb.	Aug-Nov.	FO and M
47	<i>Dactyloctenium aegypticum</i> (L.) P. Beauv.	Sep-Oct.	FO
48	<i>Dendrocalamus strictus</i> Nees.	Not seen	M and O
49	<i>Dichanthium annulatum</i> (Forssk.) Stapf.	Throughout the year	FO and M
50	<i>Dichanthium coricosum</i>	Throughout the year	FO
51	<i>Digitaria abludens</i> (Roem. & Schultes)	May-Aug.	FO
52	<i>Digitaria ciliaris</i> (Retz.) Koeler.	July-Nov.	FO
53	<i>Digitaria bicornis</i> (Lamk.) Roem. & Schult.	Aug- Oct.	FO
54	<i>Digitaria sanguinalis</i> (Linn.) Scop.	March- Dec.	FO
55	<i>Digitaria setigera</i> Roth ex Roem. & Schult.	Aug-Oct.	FO
56	<i>Digitaria stricta</i> Roth ex Roem. & Schult.	Sep-Dec.	FO
57	<i>Dimeria ornithopoda</i> Trin.	Aug- Dec.	FO
58	<i>Echinochloa colonum</i> (L.) Link.	July-June.	FO
59	<i>Echinochloa crusgalli</i> (L.) P. Breauv.	Aug-Nov.	FO
60	<i>Echinochloa framentacea</i> (Roxb.) Link.	Aug-Nov.	FO
61	<i>Echinochloa stagnina</i> (Retz.) P. Breauv.	Sept-Dec.	FO

62	<i>Eleocharis atropurpurea</i> (Retz.) J. Presl & C. Presl	Nov.-Dec.	Not Known
63	<i>Eleocharis dulcis</i> (Burm.f.) Trin. ex Hensch.	Sept.-Oct.	FO
64	<i>Eleusine corcana</i> (L.) Gaertn.	May- Dec.	FO
65	<i>Eleusine indica</i> (L.) Gaertn.	Aug- Nov.	FO
66	<i>Elionurus royleanus</i> Nees ex A. Rich	Aug-Nov.	FO
67	<i>Eragrostiella bifaria</i> (Vahl) Bor	Sep.-Dec.	FO
68	<i>Eragrostiella brachystachya</i> (Stapf) Bor	Aug.-Dec.	FO
69	<i>Eragrostis atrovirens</i> (Desf.) Trin. ex Steud	throughout the year	FO
70	<i>Eragrostis cilianensis</i> (All.) Vign.	Dec.-March	FO
71	<i>Eragrostis ciliata</i> (Roxb.) Nees	June-Dec.	FO
72	<i>Eragrostis ciliaris</i> (L.) R.Br.	Aug-Oct.	FO
73	<i>Eragrostis gangetica</i> (Roxb.) Steud.Syn.	Sep-Nov	FO
74	<i>Eragrostis japonica</i> (Thunb.) Trin.	Nov.-May	FO
75	<i>Eragrostis nutans</i> (Retz.) Nees ex Steud.	April-June	FO
76	<i>Eragrostis pilosa</i> P.Beauv.	May-Aug.	FO
77	<i>Eragrostis tremula</i> Hochst. Ex. Steud.	Sep-Dec.	FO
78	<i>Eragrostis uniloides</i> (Retz.) Nees ex Steud.	Sep-March	FO
79	<i>Exacum tetragonum</i> .	Aug - Nov.	Not Known
80	<i>Fimbristylis aestivalvis</i>	Sep-Dec.	Not Known
81	<i>Fimbristylis dichotoma</i> (L.)	throughout the year	Not Known
82	<i>Fimbristylis miliacea</i> (L.) Vahl	throughout the year	Not Known
83	<i>Hackelochia granularis</i> O.Katze.	July-Nov.	FO
84	<i>Hemarthria compressa</i> (L.f.) R.Br.	Aug.– Sept.	FO and M
85	<i>Heteropogon controtus</i> (L.) P. Beauv.	Aug- Jun.	FO and M
86	<i>Hordeum valgare</i> L.	Jan-march.	FO , M and FD
87	<i>Hygorhiza aristata</i> (Retz.) Nees et Wight & Arn	Oct.-Feb.	FO and M
88	<i>Imerata cylindrical</i> (L.) P. Beauv. V	Sep-June	FO and O
89	<i>Isachne globosa</i> (Thunb) Kuntze	Throughout the year	FO
90	<i>Ischeemum indicum</i> (Houtt.) Merrill	Aug-Dec.	FO
91	<i>Ischeemum rugosum</i> Salisb.	Aug-Nov.	FO
92	<i>Iseilema laxum</i> R. Br.	Oct-Nov.	FO
93	<i>Iseilema prostratum</i> (L.) Anderson	Oct-Jan.	FO
94	<i>Lolium temulentum</i> L.	Aug-Dec.	FO and M
95	<i>Melanocenchrisjacquemontii</i> Jaub. & Spach	Aug.Dec.	FO
96	<i>Mnesithea laevis</i> (Retz) Kunth	Aug-Jan.	FO
97	<i>Ophiuros exaltatus</i> (L.) Kuntze	Aug.-Feb.	FO
98	<i>Oplismenus burmannii</i> (Retz.)	Sept.-Nov.	FO and M
99	<i>Oplismenus compositus</i>	Throughout the year	FO
100	<i>Oryza glaberrima</i> Steud.	Sep-Nov.	FO and FD
101	<i>Oryza rufipogon</i> Griff.	Sep-Nov.	FO and FD
102	<i>Oryza sativa</i> L.	Aug-Nov. & April- May	FO and FD
103	<i>Panicum brizoides</i> (L.)	Sep-Nov.	FO
104	<i>Panicum indicum</i> (L.)	Sep-Dec.	FO
105	<i>Panicum millare</i>	Sep-Dec.	FO and FD
106	<i>Panicum notatum</i> Retz.	Sep- Feb.	FO
107	<i>Panicum paludosum</i> Roxb.	Aug-Oct.	FO

108	<i>Panicum psilopodium</i> Trin.	July-Nov.	FO and M
109	<i>Panicum sumatrense</i> Roth ex Roem. & Steud.	July-Nov.	FO
110	<i>Paspalidium flavidum</i> (Retz.) A. Camus	July-Dec.	FO
111	<i>Paspalum scrobiculatum</i> L.S	Aug-Sep	FO, M and FD
112	<i>Paspalum vaginatum</i> Swartz.	Aug-Sep.	FO
113	<i>Pennesetum hohenackri</i> Hochst. Ex Steud.	Aug-Feb.	FO
114	<i>Pennesetum pedicellatum</i> Trin.	Aug-Dec.	FO
115	<i>Pennesetum polystachion</i> (L.) Schult.	Sep-Nov.	FO
116	<i>Pennesetum typhoides</i> (Burm.) Stapf & C. E. Hubb.	Sep- Oct.	FO
117	<i>Perotis indica</i> (L.) Ktze.	Oct-Nov.	FO
118	<i>Phragmites trin karka</i> (Retz.) Trin. Ex steud.	Sep- Nov.	O and M
119	<i>Pseudobrachiaria deflexa</i> (Schum.) Launert	Aug-Dec.	FO and M
120	<i>Rottboellia exaltata</i> L. f.	Aug-Nov.	FO
121	<i>Saccharum officinalis</i> (L.)	Dec-April.	FD and FO
122	<i>Sacciolepis indica</i> (L.) A. Chase	Aug-Dec.	FO
123	<i>Sacciolepis interrupta</i> (Willd.) Stapf.	Sep-Dec.	FO
124	<i>Sachharum spontenium</i> L.	Sep-Dec.	FO and M
125	<i>Schoenefedia gracillis</i> Kunth.	Aug-Oct.	FO
126	<i>Scirpus articularis</i>	Sep-Dec	M
127	<i>Seteria barbata</i> (Lamk.) Kunth.	July-Oct.	FO
128	<i>Seteria gluca</i> (L.) P. Beauv.	Aug-Dec.	FO
129	<i>Seteria intermedia</i> Roem. & Schult.	July- Dec.	FO
130	<i>Seteria italic</i> (L.) P. Beauv.	July-Oct.	FO
131	<i>Seteria pallid-fusca</i> (Schumach.) Stapf. Hubb.	Aug-Sep.	FO
132	<i>Seteria pulmifolia</i> P. Beauv.	Aug- Jan.	FO
133	<i>Seteria pumila</i> (Poir.) Roem. & Schult.	Aug-Nov.	FO
134	<i>Seteria sacciliopsis</i>	Sep-Dec.	FO
135	<i>Sorghum helepense</i> (L.) Pers.	Oct-July & march-April	FO and M
136	<i>Sorghum miliaceum</i> (Roxb.) Snowden.	Aug-Nov.	FD and FO
137	<i>Sporobollus capillaris</i> Miq.	Aug-Dec.	FO
138	<i>Sporobollus tenuissimus</i> (Schrank.) Retz.	Aug-Sep.	FO
139	<i>Sporobolus indicus</i> (L.) R.Br.	March-Sep.	FO
140	<i>Thamnocalamus aristatus</i> (Gamble) E.G. Camus	Not seen	M and O
141	<i>Thamnocalamus falconeri</i> Hook. f. Munro.	Not seen	M and O
142	<i>Themeda lexa</i> (Anderss.) A. Camus.	July-Nov.	FO
143	<i>Themeda orundinaceae</i> Ridley	Sep-Nov.	FO
144	<i>Themeda quadrivalvis</i> (L.) O.	Sep- Nov.	FO
145	<i>Themeda triandra</i> (Forssk.)	Oct - Dec.	FO
146	<i>Thysanolaena mixima</i> (Roxb.)	Nov-May.	FO and O
147	<i>Triticum aestivum</i> L.	Jan- April	FD and FO
148	<i>Urochloa panicoides</i> P. Beauv.	July-Dec.	FO
149	<i>Vetiveria zizanioides</i> (L.) Nash.	Aug-Nov.	M and FO and O
150	<i>Zea maize</i> L.	July-Sep.	FD, M and FO

Note- FO= Fodder, FD= Food, M=Medicine, O= Ornamental.

**Conclusion-** The systematic survey of grasses and sedges species diversity of Balaghat district. Study suggests that Balaghat district have healthy diversity of grasses and sedges species that provide bulk of the fodder, medicine and ornamental product values.

**Acknowledgement-** We are extremely grateful and thanks to professor of Department of Botany JSTPG collage Balaghat for technical support, also thanks to forest department gave permission for study survey in forest area. And special thank to Praveen Rana for support in plant collection during field visit. And also thank to Rakhi Rangire and Rashmi Patak for computational work and editing's.

#### References

1. Achariyar KR, Tadulinga A. Handbook of some South Indian Grasses. Repr. ed., Bishen Singh Mahendra Pal Singh. Dehradun, 1921, 1992.
2. Blatter E, McCann C. The Bombay Grasses, Imperial Council of Agricultural Research. Scientific Monograph. 1935; 5:323.
3. Bor NL. The Grasses of Burma, Ceylon, India and Pakistan. Pergamon Press London, 1960.
4. Clayton W, Vorontsova MS, Harman KT, Williamson H. Grass Base–The Online World Grass Flora. Copyright, the Board of Trustees, Royal Botanic Gardens, Kew, 2012.
5. Dabadghao PM, Shankarnarayan KA. The Grass Cover of India. ICAR, New Delhi. 1973; 711.
6. Duthie JF. A list of the grasses of N. W. India, indigenous and cultivated. Roorkee, 1883.
7. Jain SK, Banerjee DK, Pal DC. Grasses of Bihar, Orissa and West Bengal. J Bombay Nat. Hist. Soc. 1975; 72:9095.
8. Jain SK. The Grass flora of India. A Synoptic account of uses and phytogeography. Bulletin of Botanical Survey of India. 1986; 28:229-240.
9. Moulik S. Important grasses of Eastern ghats. EPTRIENVIS Newsletter. 2000; 5(1):4-7.
10. Moulik S. The grasses and bamboos of India. Vol. I and II. Scientific Publishers, Jodhpur, 1997.
11. Parmar SP, Prajapati KA, Jasrai YT, Patel SK. Grasses and its diversity in Gujarat state – a review. Life sciences Leaflets. 2012; 10:56-66.
12. Roy GP. Grasses of Madhya Pradesh (Flora of India, Series – 4), Botanical Survey of India, Kolkatta, India, 1984.
13. Sheshadri KG. Grasses and their Varieties in Indian Literature. Asian Agri-History. 2013; 17(4):325-334.
14. Shukla U. Grasses of North-Eastern India, Scientific Publishers, Jodhpur, 1996.

