

**Research Article**

## **A CHECKLIST OF GRASSES (POACEAE) OF SAHARANPUR FOREST DIVISION**

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### **ABSTRACT**

This paper gives an account of 142 species of grasses belonging to 74 genera of Saharanpur (U.P.). This area is represented by 8 subfamily and 16 subtribes of family Poaceae. Subfamily Panicoideae (99 species) had the highest number of species followed by Chloridoideae (22 species), Pooideae (7 species), Bambusoideae (5 species), Ehrhartoideae (4 species), Arundinoideae (3 species), Centothecoideae (1 species) and Aristidoideae (1 species). While subfamilies like Anomochlooideae, Danthonioideae, Pharoideae, and Puelioideae are not represented in this area.

**Keywords:** Grasses, Poaceae, Saharanpur, U.P.

### **INTRODUCTION**

The Poaceae (Gramineae) are a large and nearly ubiquitous family of monocotyledonous flowering plants. It comprise of about 11,290 species in approximately 707 genera (Clayton *et al.*, 2012: IPNI). The families Poaceae are represented in India by about 262 genera and 1110 species. Out of 1110 species, 360 are endemic to India (Jain, 1986). In Uttar Pradesh Poaceae are represented by 110 genera and 301 species (Srivastava, 2011). A Review literature reveals that several workers did comprehensive work on grasses in the upper Gangetic plain (Babu 1977; Maheshwari 1963; Duthie 1883; Raizada 1954; Raizada *et al.*, 1957; Raizada & Jain 1964; 1966; Maheshwari, 1963 etc).

Western part of Uttar Pradesh includes Saharanpur and Muzaffarnagar districts which come under Saharanpur Forest Division. It lies in the upper Indo-gangetic plain. The whole area is fertile and sugarcane, wheat and rice are the principal crops of this region. Saharanpur is located at 29°58' N Latitude and 77°33' E Longitude. Saharanpur has a tropical climate because of the proximity of the Himalaya region across this Northern district. It is sub-humid region especially the upper Ganga plain areas. Rainfall is the most important climatic factor which affects vegetation of this area. 80-90% rainfall occurs during monsoon season from mid June to mid September and temperature varies from very high to very low in summer and winter respectively. Saharanpur records an average temperature around 23.3 degree during the course of the year. Humidity is more in the western area as compared to the eastern region of Saharanpur. In the month of May and June maximum temperature shoots up to 45°C and falls to a minimum up to 1°C in December and January. Out of the 110 genera and 301 species in UP. I collected 142 species of grasses belonging to 74 genera in Saharanpur UP (table-1 and 2).

### **MATERIALS AND METHODS**

In the course of investigation during 2012-13 & 2013-14 the entire division was frequently surveyed. Several attempts were made for collection of plants in different seasons. Many grasses specimen were collected, processed, preserved and mounted on herbarium sheets following the standard herbarium techniques (Jain and Rao, 1978). The dried and fresh specimens were identified using several legal deeds and literatures like Bor (1960); Hooker (1876) and Clayton *et al.*, (2006). Besides dried sheets were also matched and confirmed with the DD Herbarium, FRI Dehradun. The herbarium sheets are preserved in the Department of Botany, Maharaj Singh College; Saharanpur (C.C.S. University, Meerut). Analysis and list of various taxa are given in table 1 and 2.

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**RESULTS AND DISCUSSION**

Ecologically, grasses prevent soil erosion; decorate gardens and provide a surface for parks and sports fields. Today most human food comes from grasses directly as grains, indirectly as feed for meat and dairy producing animals. While inventorying the grasses of Saharanpur forest division, I collected 142 species of grasses belonging to 74 genera, 8 subfamilies and 16 tribes. Of these *Leersia hexandra*, *Hygroryza aristata* etc are some rare grasses of this area. Several anthropogenic pressures have caused the conversion of water bodies and wetlands into cultivated lands for growing Sugarcane and Rice in the study area. This has resulted not only in the losses of ecosystem characteristics but also has posed serious challenges for conservation of biodiversity in the study area. Habitat loss, anthropogenic pressures, increased competition with different hydrophytes and decreasing reproductive capacity due to decreased gene pool may be the causes of the rarity of these species in the study area. There is an urgent need to document the present status of these species and their conservation and utilization for sustainable development in this floristically rich and unique area. This district is the type locality of endemic plant like *Cymbopogon flexiosus* var. *microstachys* (Khanna, 2001). I could not relocate this species in wild.

**Table 1: Analysis of taxa**

S. No.	Subfamily	Tribe	Number of Genera	Number of Species
1	Panicoideae	4	47	99
2	Chloridoideae	3	10	22
3	Pooideae	2	6	7
4	Bambusoideae	2	4	5
5	Ehrhartoideae	2	3	4
6	Arundinoideae	1	2	3
7	Centothecoideae	1	1	1
8	Aristidoideae	1	1	1

**Table 2: List of plants**

Binomial	Subfamily	Tribe
<i>Alloteropsis cimicina</i> (L.) Stapf	Panicoideae	Paniceae
<i>Andropogon pumilus</i> Roxb.	Panicoideae	Andropogoneae
<i>Andropogon tristis</i> Nees ex Hack.	Panicoideae	Andropogoneae
<i>Apluda mutica</i> L.	Panicoideae	Andropogoneae
<i>Aristida adscensionis</i> L.	Aristidoideae	Aristideae
<i>Arundinella bengalensis</i> (Spreng.) Druce	Panicoideae	Arundinelleae
<i>Arundinella nepalensis</i> Trin.	Panicoideae	Arundinelleae
<i>Arundo donex</i> L.	Arundinoideae	Arundineae
<i>Axonopus affinis</i> A. Chase	Panicoideae	Paniceae
<i>Bambusa vulgaris</i> McClure	Bambusoideae	Bambuseae
<i>Bothriochloa glabra</i> (Roxb.) A. Camus	Panicoideae	Andropogoneae
<i>Bothriochloa intermedia</i> (R.Br.) A. Camus	Panicoideae	Andropogoneae
<i>Brachiaria brizantha</i> ( Hochst. ex A. Rich.)	Panicoideae	Paniceae
<i>Brachiaria deflexa</i> ( Schumach.) C.E. Hubb.	Panicoideae	Paniceae
<i>Brachiaria distachya</i> (L.) Stapf	Panicoideae	Paniceae
<i>Brachiaria paspaloides</i> (Presl)	Panicoideae	Paniceae

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C.E. Hubb.		
<i>Brachiaria ramosa</i> (L.) Stapf	Panicoideae	Paniceae
<i>Brachiaria reptans</i> (L.) Gard.	Panicoideae	Paniceae
<i>Capillipidium assimile</i> (Steud.)	Panicoideae	Andropogoneae
A. Camus		
<i>Cenchrus biflorus</i> Roxb.	Panicoideae	Paniceae
<i>Cenchrus ciliaris</i> L.	Panicoideae	Paniceae
<i>Cenchrus setigerus</i> Vahl	Panicoideae	Paniceae
<i>Chloris dolichostachya</i> Lagasca.	Chloridoideae	Cynodonteae
<i>Chloris virgata</i> Sw.	Chloridoideae	Cynodonteae
<i>Chrysopogon aciculatus</i> (Retz.)	Panicoideae	Andropogoneae
Trin.		
<i>Chrysopogon fulvus</i> ( Spreng.)	Panicoideae	Andropogoneae
Chiov.		
<i>Chrysopogon gryllus</i> ( L.) Trin.	Panicoideae	Andropogoneae
<i>Coix gigantea</i> Koenig ex Roxb.	Panicoideae	Andropogoneae
<i>Coix lacryma-jobi</i> L.	Panicoideae	Andropogoneae
<i>Cymbopogon citratus</i> (DC.)	Panicoideae	Andropogoneae
Stapf.		
<i>Cymbopogon distans</i> (Nees)	Panicoideae	Andropogoneae
Wats.		
<i>Cymbopogon flexuosus</i> var.	Panicoideae	Andropogoneae
<i>microstachys</i> (Hook. F.) Bor		
<i>Cynodon dactylon</i> (L.) Pers.	Chloridoideae	Cynodonteae
<i>Cyrtococcum accrescens</i> (Trin.)	Panicoideae	Paniceae
Stapf		
<i>Dactyloctenium aegypticum</i> (L.)	Chloridoideae	Cynodonteae
P. Beauv.		
<i>Dactyloctenium indicum</i> Boiss.	Chloridoideae	Cynodonteae
<i>Dendrocalamus giganteus</i> Wall	Bambusoideae	Bambuseae
ex Munro		
<i>Dendrocalamus strictus</i> Tweet.	Bambusoideae	Bambuseae
<i>Desmostachya bipinnata</i> (L.)	Chloridoideae	Chlorideae
Stapf		
<i>Dicanthium annulatum</i> (Forssk.)	Panicoideae	Andropogoneae
Stapf		
<i>Digitaria sanguinalis</i> (L.) Scop.	Panicoideae	Paniceae
<i>Digitaria adscendens</i> (HBK)	Panicoideae	Paniceae
Henr.		
<i>Digitaria bicornis</i> (Lamk.) Roem.	Panicoideae	Paniceae
<i>Digitaria biformis</i> Willd.	Panicoideae	Paniceae
<i>Digitaria cruciata</i> (Nees) A.	Panicoideae	Paniceae
Camus		
<i>Digitaria longiflora</i> (Retz.) Pers.	Panicoideae	Paniceae
<i>Digitaria setigera</i> Roth apud	Panicoideae	Paniceae
Roem. et Schult.		
<i>Digitaria stricta</i> Roth ex Roem.	Panicoideae	Paniceae
et Schult.		
<i>Echinochloa colonum</i> (L.) Link	Panicoideae	Paniceae
<i>Echinochloa crusgalli</i> (L.) P.	Panicoideae	Paniceae

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Beauv.		
<i>Eleusine corocana</i> (L.) Gaertn.	Chloridoideae	Eragrostideae
<i>Eleusine indica</i> (L.) Gaertn.	Chloridoideae	Eragrostideae
<i>Eragrostiella bifaria</i> (Vahl) Bor	Chloridoideae	Eragrostideae
<i>Eragrostis diarrhena</i> (Schult.) Steud.	Chloridoideae	Eragrostideae
<i>Eragrostis gangetica</i> (Roxb.) Steud.	Chloridoideae	Eragrostideae
<i>Eragrostis nigra</i> Nees ex Steud.	Chloridoideae	Eragrostideae
<i>Eragrostis pilosa</i> (L.) P. Beauv.	Chloridoideae	Eragrostideae
<i>Eragrostis tef</i> (Zucc.) Trotter	Chloridoideae	Eragrostideae
<i>Eragrostis tenella</i> (L.) P. Beauv.	Chloridoideae	Eragrostideae
<i>Eragrostis tremula</i> Hochest. ex Steud.	Chloridoideae	Eragrostideae
<i>Eragrostis unioloides</i> (Retz.) Nees ex Steud.	Chloridoideae	Eragrostideae
<i>Erianthus hookeri</i> Hack. in DC.	Panicoideae	Andropogoneae
<i>Erianthus ravennae</i> (L.) P. Beauv.	Panicoideae	Andropogoneae
<i>Eriochloa procera</i> (Retz.) C.E. Hubb.	Panicoideae	Paniceae
<i>Eulalia mollis</i> (Griseb.) O. Ktze.	Panicoideae	Andropogoneae
<i>Eulaliopsis binata</i> (Retz.) C.E. Hubbard.	Panicoideae	Andropogoneae
<i>Gigantochloa albociliata</i> (Munro) Kurz	Bambusoideae	Bambuseae
<i>Hemarthria compressa</i> (L.f.) R.Br.	Panicoideae	Andropogoneae
<i>Heteropogon contortus</i> (L.) P. Beauv.	Panicoideae	Andropogoneae
<i>Hygroryza aristata</i> (Retz.) Nees ex Wight & Arn.	Ehrhartoideae	Zizaniinae
<i>Hymenachne pseudointerrupta</i> C. Muell.	Panicoideae	Paspaleae
<i>Imperata cylindrica</i> (L.) P. Beauv.	Panicoideae	Andropogoneae
<i>Isachne miliacea</i> Roth	Panicoideae	Isachne
<i>Ischaemum rugosum</i> Salisb.	Panicoideae	Andropogoneae
<i>Iseilema laxum</i> Hack. In DC.	Panicoideae	Andropogoneae
<i>Iseilema prostratum</i> (L.) Anderss.	Panicoideae	Andropogoneae
<i>Leersia hexandra</i> Swartz.	Ehrhartoideae	Oryzeae
<i>Leptochloa chinensis</i> (L.) Nees	Chloridoideae	Cynodonteae
<i>Leptochloa panicea</i> (Retz.) Ohwi	Chloridoideae	Cynodonteae
<i>Lolium temulentum</i> L.	Pooideae	Poeae
<i>Microstegium nudum</i> (Trin.) A. Camus	Panicoideae	Andropogoneae
<i>Microstegium ciliatum</i> (Trin.) A. Camus	Panicoideae	Andropogoneae
<i>Miscanthus nepalensis</i> (Trin.)	Panicoideae	Andropogoneae

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Hack. in DC.

<i>Mnesithea laevis</i> (Retz.) Kunth	Panicoideae	Andropogoneae
<i>Narenga porphyrocoma</i> (Hance) Bor	Panicoideae	Andropogoneae
<i>Neyraudia arundinacea</i> (L.) Henr.	Chloridoideae	Eragrostideae
<i>Ophiuros exaltatus</i> (L.) O. Ktze.	Panicoideae	Andropogoneae
<i>Oplismenus burmannii</i> (Retz.) P. Beauv.	Panicoideae	Paniceae
<i>Oplismenus compositus</i> (L.) P. Beauv.	Panicoideae	Paniceae
<i>Oryza rufipogon</i> Griff.	Ehrhartoideae	Oryzeae
<i>Oryza sativa</i> L.	Ehrhartoideae	Oryzeae
<i>Panicum maximum</i> Jacq.	Panicoideae	Paniceae
<i>Panicum antidotale</i> Retz.	Panicoideae	Paniceae
<i>Panicum miliaceum</i> L.	Panicoideae	Paniceae
<i>Panicum miliare</i> L.	Panicoideae	Paniceae
<i>Panicum paludosum</i> Roxb.	Panicoideae	Paniceae
<i>Panicum psilopodium</i> Trin.	Panicoideae	Paniceae
<i>Panicum repens</i> L.	Panicoideae	Paniceae
<i>Panicum trypheron</i> Schult.	Panicoideae	Paniceae
<i>Paspalidium flavidum</i> (Retz.) A. Camus	Panicoideae	Paniceae
<i>Paspalidium geminatum</i> (Forssk.) Stapf	Panicoideae	Paniceae
<i>Paspalidium punctatum</i> (Burm.) A. Camus	Panicoideae	Paniceae
<i>Paspalum commersonii</i> Lamk.	Panicoideae	Paniceae
<i>Paspalum compactum</i> Roth	Panicoideae	Paniceae
<i>Paspalum dilatatum</i> Poir.	Panicoideae	Paniceae
<i>Paspalum distichum</i> L.	Panicoideae	Paniceae
<i>Paspalum scrobiculatum</i> L.	Panicoideae	Paniceae
<i>Pennisetum purpureum</i> Schumach.	Panicoideae	Paniceae
<i>Pennisetum typhoides</i> (Burm.) Stapf	Panicoideae	Paniceae
<i>Phalaris minor</i> Retz.	Pooideae	Poeae
<i>Phragmites communis</i> Trin.	Arundinoideae	Arundineae
<i>Phragmites karka</i> (Retz.) Trin. ex Steud.	Arundinoideae	Arundineae
<i>Phyllostachys nigra</i> (Lindl.) Munro	Bambusoideae	Arundinarieae
<i>Poa annua</i> L.	Pooideae	Poeae
<i>Pogonatherum crinitum</i> (Thunb.) Kunth	Panicoideae	Andropogoneae
<i>Pogonatherum paniceum</i> (Lamk.) Hack.	Panicoideae	Andropogoneae
<i>Polypogon monspeliensis</i> (L.) Desf.	Pooideae	Poeae
<i>Pseudosorghum fasciculare</i>	Panicoideae	Andropogoneae

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(Roxb.) A. Camus		
<i>Rottboellia exaltata</i> L.f.	Panicoideae	Andropogoneae
<i>Saccharum arundinaceum</i> Retz.	Panicoideae	Andropogoneae
<i>Saccharum bengalense</i> Retz.	Panicoideae	Andropogoneae
<i>Saccharum filifolium</i> Steud.	Panicoideae	Andropogoneae
<i>Saccharum officinarum</i> L.	Panicoideae	Andropogoneae
<i>Saccharum spontaneum</i> L.	Panicoideae	Andropogoneae
<i>Sacciolepis indica</i> (L.) A. Camus	Panicoideae	Paniceae
<i>Sacciolepis interrupta</i> (Willd.) Stapf	Panicoideae	Paniceae
<i>Sacciolepis myosuroides</i> (R.Br.) A. Camus	Panicoideae	Paniceae
<i>Secale cereale</i> L.	Pooideae	Triticeae
<i>Setaria glauca</i> (L.) P. Beauv.	Panicoideae	Paniceae
<i>Setaria homogyna</i> (Steud.) Chiov.	Panicoideae	Paniceae
<i>Setaria italica</i> (L.) P. Beauv.	Panicoideae	Paniceae
<i>Setaria verticillata</i> (L.) P. Beauv.	Panicoideae	Paniceae
<i>Setaria viridis</i> (L.) P. Beauv.	Panicoideae	Paniceae
<i>Sorghum halepense</i> (L.) Pers.	Panicoideae	Andropogoneae
<i>Sporobolus diander</i> (Retz.) P. Beauv.	Chloridoideae	Eragrostideae
<i>Sporobolus indicus</i> auctt. (L.) R.Br.	Chloridoideae	Eragrostideae
<i>Themeda anathera</i> (Nees) Hack. in DC.	Panicoideae	Andropogoneae
<i>Themeda arundinacea</i> (Roxb.) Ridley	Panicoideae	Andropogoneae
<i>Thysanolaena maxima</i> (Roxb.) O. Ktze.	Centothecoideae	Thysanolaeneae
<i>Triticum aestivum</i> L.	Pooideae	Triticeae
<i>Urochloa panicoides</i> P. Beauv.	Panicoideae	Paniceae
<i>Zea mays</i> L.	Panicoideae	Andropogoneae

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It may fall under threatened category. So there is a need to assess its IUCN status so that proper conservation measure may be taken for protect and rehabilitation this species.

The floristic study of this division will be useful for students, researchers, teachers, conservationist and those who are beginners and interested in plant taxonomy.

This list of grasses is based chiefly upon the personnel observation specimens in field. Undoubtedly, there are errors in identification of grasses and further comprehensive study will reveal other species that are not now known for this area.

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**REFERENCES**

- Babu CR (1977).** *Herbaceous Flora of Dehradun* (CSIR Publication) New Delhi.  
**Bor NL (1960).** *The Grasses of Burma, Ceylon, India and Pakistan* (Pergamon

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Press) London.

**Clayton W, Vorontsova MS, Harman KT and Williamson H (2012).** Grass Base–The Online World Grass Flora. Copyright, the Board of Trustees, Royal Botanic Gardens, Kew.

**Clayton WD, Harman KT and Williamson H (2006).** Onwards – Grass Base – the online world grass flora. Available: <http://www.kew.org/data/grasses-db.html>, Accessed 23 Oct 2008.

**Duthie JF (1883).** *A list of the grasses of N. W. India, indigenous and cultivated.* Roorkee.

**Hooker JD (1876).** *The Flora of British India.* BSMPS, Dehra Dun **1-7.**

**Jain SK (1986).** The Grass flora of India. A Synoptic account of uses and phytoecography. *Bulletin of Botanical Survey of India* **28** 229-240.

**Jain SK and Rao RR (1978).** *A Handbook of Field and Herbarium Methods* (Today and Tomorrow's Pub.) New Delhi.

**Khanna KK (2001).** Endemic plants of Uttar Pradesh (Angiosperms). *Phytotaxonomy* **1** 71-75.

**Maheshwari JK (1963).** *The Flora of Delhi,* CSIR, New Delhi.

**Raizada MB (1954).** Grasses of the Upper Gangetic Plain and some aspects of their Ecology. *Indian Forester* **80** 24-26.

**Raizada MB, Bharadwaja RC and Jain SK (1957).** Grasses of Upper Gangentic Plain. Panicoideae. I. (Maydeae and Andropogoneae). *Indian Forestry Records* (n.s.) **4** 171-277.

**Raizada MB and Jain SK (1964).** Grasses of Upper Gangentic Plain, Panicoideae II. *Indian Forestry Records* **5** 151-226.

**Raizada MB and Jain SK (1966).** Grasses of Upper Gangentic Plain. Pooideae. *Indian Forester* **92** 637-642.

**Srivastava SK (2011).** Plant diversity and conservation strategies of Uttar Pradesh. *Phytotaxonomy* **11** 45-62.