

Grasses of Bihar, Orissa and West Bengal¹

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The paper lists 489 species and varieties belonging to 155 genera of grasses occurring in Bihar, Orissa and West Bengal. The occurrence of the taxa in one or more of these three States is indicated. 32 taxa are reported as new distributional records for these States.

The States of Bihar, Orissa and West Bengal constitute the lower or eastern part of the Gangetic Plain. Clarke (1898) and Chatterjee (1939) regarded the Gangetic Plain (comprising almost entire Uttar Pradesh, Bihar, Orissa and West Bengal, and large parts of eastern Rajasthan and northern Madhya Pradesh) as a distinct phytogeographical region of India.

The senior author, in collaboration with Prof. M. B. Raizada, studied the grasses of Upper Gangetic Plains (comprising Uttar Pradesh, eastern parts of Rajasthan and northern parts of Madhya Pradesh) over a number of years (Raizada *et al.* 1961; Raizada & Jain 1965, 1966). It was considered useful to extend the studies to the remaining parts of the Gangetic Plain i.e. lower Gangetic plains in the States of Bihar, Orissa and West Bengal.

The present work was, however, not confined only to the plains, and in order to facilitate the revision of the family Poaceae for the floras of these three States, the present political boundaries of these States were taken as the area of study, this meant inclusion of the hilly regions.

Prain's (1903) book is the only work dealing with the plants of Bengal State as a whole. Among later works, which deal with grasses of this state, the following may be mentioned—Banerjee (1968), Chakravarty (1957), Chaudhuri (1959a, b; 1960a, b; 1965), Datta & Maiti (1963), Datta & Majumdar (1966), Majumdar (1956), Mallick (1966), Matthew (1966) and Paul & Bhattacharya (1959).

Hara's work (1966) on eastern Himalayas also covers Darjeeling hills.

For Bihar and Orissa, comparatively more recent works are avail-

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able; namely the Botany of Bihar and Orissa by Haines (1925); and its supplement by Mooney (1950). The southern part of Orissa was formerly in Madras Presidency; and was covered by Fischer's (1934) work. A few later works, such as lists of grasses or tour reports for some districts or smaller regions of these states are also available; such as—Bal (1942), Banerjee & Banerjee (1968), Bharadwaja (1958), Bressers (1951), Kanodia & Mallick (1966), Mukherjee (1956), Panigrahi (1966), Panigrahi *et al.* (1964), Paul (1967), Raizada (1949), Raju (1964), Sanyal (1957), Singh & Verma (1964), Srivastava (1954, 1955, 1956a, b, 1959) and Thothathri *et al.* (1966).

We have made collections in these states, and have studied the vast collections deposited in the Central National Herbarium. The collections lodged in the herbaria of the Eden Gardens, Calcutta, Central Rice Research Institute and Ravenshaw College, Cuttack have also been consulted.

The following list includes all the species and varieties of grasses reported from Bihar, Orissa and West Bengal; the list includes 155 genera, and 489 species and varieties. The arrangement of the taxa is, in general, according to Bor (1960); namely, first the subfamily Panicoideae and then the subfamily Pooideae. Under the sub-families, the tribes; under the tribes, the genera; and under the genera the species are arranged alphabetically. The nomenclature has been verified with the works of Bor (*loc. cit.*), Raizada (1959), Jain (1967b) and WEALTH OF INDIA (1962, 1966, 1969).

Only current botanical names are given. Synonyms and information on distribution, etc. can be seen in Bor's book, for which a reference has been given. When a species is not given in Bor's book (e.g. all Bambuseae), a reference is made to Hooker's (1896) account of Indian grasses, or some other relevant work.

The occurrence of most of these species in this region has been verified by actual specimens collected by us in the field or studied by us in the herbaria. The occurrence of a species in the three states is shown by the following abbreviations:

B : Bengal
Bi: Bihar
O : Orissa

This abbreviation in small capital type indicates that actual specimens for that state have been seen by us; ordinary type means that the report from that state is based on published literature.

The jurisdiction of Prain's (1903) flora was much wider than the present boundaries of West Bengal, and therefore, several species included in Prain's book may not be found marked for Bengal (i.e. B).

Species which are largely cultivated for cereal or fodder, etc. are

included, and are marked C; for such species the names of the states are omitted. Species cultivated only on experimental scale are not included.

NEW RECORDS

The present study has led to the discovery of several additional species of grasses from Bengal, Bihar and Orissa, i.e. taxa not so far reported from these states, and in a few cases from India as a whole, in any published work. Such names are marked with a special sign; namely asterisk (*) for Bengal, plus (+) for Bihar and O (O) for Orissa. The taxa which are new records for India, are marked @. These instances of new distributional records are based on authors' own examination of specimens; instances arising out of mere published information are not included. A reference has been given, where more details about some of these new records can be seen.

The bibliography includes only important references on floristics, particularly on grasses, of the region.

Subfamily: PANICOIDEAE

Tribe: ANDROPOGONEAE

- | | |
|-------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| <i>Andropogon ascinodis</i> C. B. Clarke.
Bor 90. (BI, O). | <i>Bothriochloa glabra</i> (Roxb.) A.
Camus. Bor 107. (B, BI). |
| <i>Andropogon pumilus</i> Roxb. Bor 93.
(B, BI, O). | <i>Bothriochloa intermedia</i> (R. Br.) A.
Camus var. <i>intermedia</i> . Bor 108.
(B, BI). |
| <i>Apluda mutica</i> Linn. Bor 93. (B, BI,
O). | <i>Bothriochloa intermedia</i> var. <i>punctata</i>
(Roxb.) Keng. Bor 108. (B, BI, O). |
| <i>Apocopis courtallumensis</i> (Steud.)
Henr. Bor 95. (BI). | <i>Bothriochloa ischaemum</i> (Linn.)
Keng. Bor 108. (B). |
| <i>Apocopis paleacea</i> (Trin.) Hochr.
Bor 96. (B, BI). | <i>Bothriochloa kuntzeana</i> (Hack.)
Henr. Bor 108. (BI). |
| <i>Apocopis vaginata</i> Hack. Bor 96.
(BI, O). | <i>Bothriochloa odorata</i> (Lisboa) A.
Camus. Bor 109. (BI). |
| <i>Arthraxon castratus</i> (Griff.) Nara-
yan. ex Bor. Bor 99. (BI). | <i>Bothriochloa pertusa</i> (Linn.) A.
Camus. Bor 110. (B, BI, O). |
| <i>Arthraxon echinatus</i> Hochst. Bor 99.
(O). | <i>Capillipedium assimile</i> (Steud.) A.
Camus. Bor 110. (B, BI, O). |
| <i>Arthraxon hispidus</i> (Thunb.) Mak-
ino. Bor 99. (B, BI). | <i>Capillipedium parviflorum</i> (R. Br.)
Stapf. Bor 112. (B, BI, O). |
| <i>Arthraxon lancifolius</i> (Trin.) Hochst.
Bor 100. (B, BI). | <i>Chrysopogon aciculatus</i> (Retz.) Trin.
Bor 115. (B, BI, O). |
| <i>Arthraxon nudus</i> Hochst. Bor 101.
(B, BI, O). | <i>Chrysopogon fulvus</i> (Spreng.)
Chiov. Bor 116. (BI, O). |
| <i>Arthraxon prionodes</i> (Steud.) Dandy.
Bor 101. (BI). | <i>Chrysopogon gryllus</i> (Linn.) Trin.
Bor 117. (B, BI). |
| + <i>Arthraxon quartinianus</i> (Rich.)
Nash. Bor 102. (BI). | <i>Chrysopogon hamiltonii</i> (Hook. f.) |

- Haines. Bor 117. (BI).
Chrysopogon lancearius (Hook. f.)
 Haines. Bor 118. (B, BI, O).
Chrysopogon polyphyllus (Hack.)
 Blatt. et McCann. Bor 118. (Bi).
Chrysopogon serrulatus Trin. Bor
 118. (BI).
 * *Coelorhachis khasiana* (Hack.)
 Stapf ex Bor. Bor 121. (B).
Coelorhachis striata (Nees ex Steud.)
 A. Camus var. *striata*. Bor 121.
 (B).
Cymbopogon caesius (Nees) Stapf.
 Bor 125. (Bi, O).
 + *Cymbopogon citratus* (DC.) Stapf.
 Bor 126. (B, BI).
Cymbopogon flexuosus (Nees ex
 Steud.) Wats. Bor 127. (B, Bi).
Cymbopogon flexuosus (Nees ex
 Steud.) Wats. var. *microstachys*
 (Hook. f.) Bor. Bor 127. (BI).
Cymbopogon gidarba (Ham. ex
 Hook. f.) Haines. Bor 128. (BI, O)
Cymbopogon hookeri (Munro ex
 Hack.) Stapf ex Bor. Bor 128.
 (B).
Cymbopogon jwarancusa (Jones)
 Schult. Bor 128. (B, Bi, o).
Cymbopogon khasianus (Hack.)
 Hack.) Stapf ex Bor. Bor 128.
 (B).
Cymbopogon martinii (Roxb.) Wats.
 Bor 129. (B, BI, O).
Cymbopogon microtheca (Hook. f.)
 A. Camus. Bor 129. (B, Bi).
Cymbopogon nardus (Linn.) Rendle.
 Bor 130. (B, BI).
Cymbopogon pendulus (Nees ex
 Steud.) Wats. Bor 131. (B, Bi).
Cymbopogon schoenanthus (Linn.)
 Spreng. Bor 131. (B).
Dichanthium annulatum (Forssk.)
 Stapf. Bor 133. (B, BI, o).
Dichanthium aristatum (Poir.) C.E.
 Hubb. Bor 134. (B, Bi, O).
Dichanthium caricosum (Linn.) A.
 Camus. Bor 134. (B, Bi, O).
Diectomis fastigiata (Sw.) Kunth.
 Bor 135. (B, BI, O).
Dimeria connivens Hack. Bor 140.
 (BI, O).
 + *Dimeria hohenackeri* Hochst. ex
 Miq. Bor 142. (BI).
Dimeria lehmannii (Nees) Hack.
 Bor 142. (O).
Dimeria mooneyi Raizada ex
 Mooney. Bor 142. (o).
Dimeria orissae Bor. Bor 142. (o).
Dimeria ornithopoda Trin. var.
ornithopoda. Bor 142. (B, BI, O).
Dimeria ornithopoda Trin. var.
gracillima Bor. Bor 144. (BI).
 + *Dimeria pubescens* Hack. Bor 144.
 (BI).
 @ *Dimeria trimenii* Hook. f. Bor
 144. (o).
Eremopogon foveolatus (Del.) Stapf.
 Bor 148. (B, BI, O).
Erianthus longisetosus Anderss.
 Bor 151. (B).
Erianthus longisetosus Anderss. var.
hookeri (Hack.) Bor. Bor 151.
 (B).
Erianthus ravennae (Linn.) P.
 Beauv. Bor 151. (B, Bi).
Erianthus rufipilus (Steud.) Griseb.
 Bor 152. (B).
Erianthus sikkimensis Hook. f. Bor
 152. (B).
Eulalia fastigiata (Nees) Haines.
 Bor 155. (B, Bi).
Eulalia fimbriata (Hack.) O. Ktze.
 Bor 155. (B).
Eulalia leschenaultiana (Decne.)
 Ohwi. Bor 155. (B, BI, O).
Eulalia mollis (Griseb.) O. Ktze.
 Bor 156. (B).
Eulalia quadrinervis (Hack.) O.
 Ktze. Bor 156. (B).
Eulalia trispicata (Schult.) Henr.
 Bor 157. (B, BI, O).
Eulaliopsis binata (Retz.) C. E.
 Hubbard. Bor 158. (B, BI, o).
Hackelochloa granularis (Linn.) O.
 Ktze. Bor 159. (B, BI, o).
Hackelochloa porifera (Hack.)
 Rhind. Bor 160. (B).
Hemarthria compressa (Linn. f.)
 R. Br. Bor 161. (B, BI, O).
Hemarthria protensa Steud. Bor 161.
 (B, BI).
Heteropogon contortus (Linn.)
 P. Beauv. ex Roem. et Schult.
 Bor 163. (B, BI, o).
Heteropogon melanocarpus (Ell.)
 Benth. Bor 165. (BI, O).

- Hyparrhenia rufa* (Nees) Stapf.
Bor 167. (B).
- Imperata cylindrica* (Linn.) P.
Beauv. Bor 169. (B, BI, O).
- Imperata cylindrica* (Linn.) P.
Beauv. var. *major* (Nees) Hubb.
et Vaugh. (B).
- Indochloa clarkei* (Hack.) Bor.
Bor 171. (BI).
- Ischaemum duthiei* Stapf ex Bor.
Bor 178. (B, BI).
- Ischaemum hirtum* Hack. Bor 179.
(BI).
- Ischaemum indicum* (Houtt.)
Merrill. Bor 180. (B, BI, O).
- Ischaemum rugosum* Salisb. Bor 184.
(B, BI, O).
- Ischaemum semisagittatum* Roxb.
Bor 185. (B).
- Ischaemum timorense* Kunth.
Bor 185. (B, BI).
- * *Iseilema antheplioroides* Hack.
Bor 187. (B, BI, O).
- Iseilema holei* Haines. Bor 188. (Bi).
- Iseilema laxum* Hack. Bor 188,
(B, BI, O).
- Iseilema prostratum* (Linn.) Anderss.
Bor 188. (B, BI, O).
- Lophopogon kingii* Hook. f. Bor 190.
(BI).
- Manisuris clarkei* (Hack.) Bor apud
Santapau. Bor 191. (BI, O).
- Microstegium ciliatum* (Trin.)
A. Camus. Bor 193. (B, BI, O).
- Microstegium nudum* (Trin.)
A. Camus. Bor 194. (B).
- Microstegium petiolare* (Trin.) Bor.
Bor 194. (O).
- * *Microstegium vagans* (Nees ex
Steud.) A. Camus. Bor 195. (B).
- Microstegium vimineum* (Trin.)
A. Camus. (B).
- Miscanthus nepalensis* (Trin.) Hack.
Bor 196. (B).
- Miscanthus nudipes* (Griseb.) Hack.
Bor 196. (B).
- Mnesithea laevis* (Retz.) Kunth.
Bor 197. (B, BI, O).
- Narenga fallax* (Balansa) Bor.
Bor 198. (B, BI).
- Narenga porphyrocoma* (Hance)
Bor. Bor 198. (B, BI, O).
- Ophiuros exaltatus* (Linn.) O. Ktze.
Bor 199. (B, BI).
- Ophiuros megaphyllus* Stapf ex
Haines. Bor 199. (B, BI).
- O *Pogonatherum crinitum* (Thunb.)
Kunth. Bor 200. (B, BI, O).
- Pogonatherum paniceum* (Lamk.)
Hack. Bor 202. (B, BI, O).
- Pogonatherum rufo-barbatum* Griff.
Bor 202 (O).
- @ *Polytrias amauro* (Buse) O. Ktze.
Bor 202 (B). [Jain & Pal 1968].
- Pseudanthistiria heteroclita* (Roxb.)
Hook. f. Bor 203. (B).
- Pseudopogonatherum contortum*
(Brongn.) A. Camus. Bor 204.
(B, BI).
- Pseudosorghum fasciculare* (Roxb.)
A. Camus. Bor 205. (B, BI, O).
- Rottboellia exaltata* Linn. f. Bor 206.
(B, BI, O).
- Saccharum arundinaceum* Retz.
Bor 211. (B, BI).
- Saccharum bengalense* Retz. Bor 211.
(B, BI, O).
- Saccharum officinarum* Linn. Bor 212.
(C).
- Saccharum procerum* Roxb. Bor 213.
(B).
- Saccharum spontaneum* Linn. Bor
214. (B, BI, O).
- Schizachyrium brevifolium* (Sw.)
Nees ex Buse. Bor 215. (B, BI, O).
- Schizachyrium exile* (Hochst.) Stapf.
Bor 216. (B, BI, O).
- Sclerostachya fusca* (Roxb.)
A. Camus. Bor 217. (B, BI).
- Sehima nervosum* (Rottl.) Stapf.
Bor 218. (B, BI).
- Sorghum cernuum* Host. var. *globo-*
sum (Hack.) Snowden. Bor 231.
(C).
- Sorghum cernuum* Host. var. *yem-*
ense (Koern.) Snowden. Bor 231.
(C).
- Sorghum conspicuum* Snowden. var.
orientale Snowden. Bor 232. (C).
- Sorghum conspicuum* Snowden. var.
usaramense (Busse et Pilger)
Snowden. Bor 232. (C).
- Sorghum controversum* (Steud.)
Snowden. 222. (B, BI).
- Sorghum halepense* (Linn.) Pers.
Bor 222. (C).

- Sorghum miliiforme* (Hack.) Snowden var. *miliiforme*. Bor 239. (C).
Sorghum miliiforme (Hack.) Snowden var. *rotundulum* Snowden. Bor 239. (C).
Sorghum nervosum Bess. ex Schult. Bor 239. (C).
Sorghum nitidum (Vahl) Pers. Bor 245. (BI).
Sorghum roxburghii Stapf var. *nanum* Snowden. Bor 241. (C).
Sorghum vulgare Pers. (C).
Thaumastochloa cochinchinensis (Lour.) C. E. Hubb. Bor 247. (BI)
Themeda arundinacea (Roxb.) Ridley. Bor 250. (B, BI, O).
Themeda caudata (Nees) A. Camus. Bor 250. (B, BI, O).
Themeda hookeri (Griseb.) A. Camus. Bor 251. (B).
Themeda laxa (Anderss.) A. Camus. Bor 251. (BI, O).
Themeda mooneyi Bor. Bor 252. (O).
Themeda quadrivalvis (Linn.) O. Ktze. Bor 252. (B, BI, O).
Themeda saxicola Bor. Bor 252. (O).
Themeda strigosa (Ham. ex Hook.f.) A. Camus. Bor 252. (B, BI).
Themeda triandra Forssk. Bor 254. (B, BI, O).
Themeda villosa (Poir.) A. Camus. Bor 254. (B, BI, O).
Thysia zea (Clarke) Stapf. Bor 255. (B).
Vetiveria zizanioides (Linn.) Nash. Bor 258. (B, BI, O).
Vossia cuspidata (Roxb.) Griff. Bor 259. (B).

Tribe: MAYDEAE

- Chionachne koenigii* (Spreng.) Thw. Bor 262. (B, BI, O).
Coix aquatica Roxb. Bor 264. (B, BI, O).
Coix gigantea Koenig ex Roxb. Bor 264. (B, BI, O).
Coix lacryma-jobi Linn. var. *lacryma-jobi*. Bor 265. (B, BI, O).
 * *Coix lacryma-jobi* Linn. var. *mayuen* (Romanet) Stapf. Bor 265. (B, O).
Polytoca digitata (Linn. f.) Druce. Bor 267. (B, BI).
Zea mays Linn. Bor 270. (C).

Tribe: PANICEAE

- Acroceras munroanum* (Balansa) Henr. Bor 275. (B).
Acroceras zizanioides (H.B.K.) Dandy. Bor 275. (B).
Alloteropsis cimicina (Linn.) Stapf. Bor 276. (B, BI, O).
Alloteropsis semialata (R. Br.) Hitchc. Bor 276. (BI).
Axonopus compressus (Swartz.) P. Beauv. Bor 278. (B).
Brachiaria distachya (Linn.) Stapf. Bor 281. (B, BI, O).
Brachiaria eruciformis (J.E. Sm.) Griseb. Bor 283. (B, BI, O).
Brachiaria kurzii (Hook. f.) A. Camus. Bor 283 (B, BI).
 + *Brachiaria miliiformis* (Presl.) A. Chase. Bor 283. (B, BI).
 O *Brachiaria mutica* (Forssk.) Stapf. Bor 284. (B, O).
Brachiaria ramosa (Linn.) Stapf. Bor 284. (B, BI, O).
Brachiaria remota (Retz.) Haines. Bor 285. (B, O).
Brachiaria reptans (Linn.) Gard. et C. E. Hubb. Bor 285. (B, BI, O).
Brachiaria setigera (Retz.) C. E. Hubb. Bor 286. (B, BI).
 *+ *Brachiaria subquadripara* (Trin.) Hitchc. Bor 286. (B, BI) [Banerjee 1971a]
 * *Brachiaria villosa* (Lamk.) A. Camus var. *barbata* Bor. Bor 286. (B). [Banerjee 1971a]
Cenchrus ciliaris Linn. Bor 287. (B, BI).
Cenchrus echinatus Linn. Bor 287. (B).
Cenchrus pennisetiformis Hochst. et

- Steud. ex Steud. Bor 289. (Bi).
Cyrtococcum accrescens (Trin.)
 Stapf. Bor 291. (B).
Cyrtococcum oxyphyllum (Steud.)
 Stapf. Bor 291. (B, Bi, O).
Cyrtococcum patens (Linn.)
 A. Camus. Bor 292. (B, Bi, O).
Cyrtococcum trigonum (Retz.)
 A. Camus. Bor 292. (B).
Digitaria adscendens (H.B.K.) Henr.
 Bor 298. (B, Bi, O).
Digitaria adscendens (H.B.K.) Henr.
 subsp. *chrysolephara* (Fig. et. de
 Not.) Henr. Bor 299. (B, Bi).
Digitaria bicornis (Lamk.) Roem. et
 Schult. ex Loud. Bor 299. (B, Bi).
 + *Digitaria biformis* Willd. Bor 299.
 (Bi, O).
Digitaria cruciata (Nees) A. Camus.
 Bor 300. (B, Bi).
Digitaria fuscescens (Presl) Henr.
 Bor 301. (B).
Digitaria granularis (Trin.) Henr.
 Bor 301. (B, Bi, O).
Digitaria longiflora (Retz.) Pers.
 Bor 302. (B, Bi, O).
Digitaria pentzii Stent. Bor 304. (B).
 *+ *Digitaria preslii* (Kunth.) Henr.
 Bor 304. (B, Bi). [Banerjee 1968]
Digitaria sanguinalis (Linn.) Scop.
 Bor 304. (B, Bi, O).
Digitaria setigera Roth apud Roem.
 et Schult. Bor 305. (B, Bi).
Digitaria stricta Roth ex Roem. et
 Schult. Bor 305. (B, Bi, O).
 + *Digitaria thwaitesii* (Hack.) Henr.
 Bor 306. (Bi).
Digitaria timorensis (Kunth.) Bal.
 Bor 306. (B).
Digitaria violascens Link. Bor 307.
 (B).
Echinochloa colonum (Linn.) Link.
 Bor 308. (B, Bi, O).
Echinochloa crusgalli (Linn.)
 P. Beauv. Bor 310. (B, Bi, O).
Echinochloa crusgalli (Linn.) P.
 Beauv. var. *breviseta* (Doell) Neilr.
 Bor 310. (B).
 * *Echinochloa cruspavonis* (H.B.K.)
 Schult. Bor 310 (B).
 [Banerjee 1971a]
Echinochloa frumentacea Link.
 Bor 311. (B, Bi, O).
Echinochloa stagnina (Retz.)
 P. Beauv. Bor 311. (B, Bi, O).
Eriochloa procera (Retz.)
 C. E. Hubbard. Bor 312.
 (B, Bi, O).
Hymenachne pseudointerrupta
 C. Muell. Bor 313. (B, Bi, O).
Ichnanthus vicinus (F. M. Bail.)
 Merr. Bor 314. (O).
 * *Melinis minutiflora* P. Beauv.
 Bor 315. (B).
Oplismenus burmannii (Retz.)
 P. Beauv. Bor 317. (B, Bi, O).
Oplismenus compositus (Linn.)
 P. Beauv. Bor 317. (B, Bi, O).
Panicum antidotale Retz. Bor 322.
 (B, Bi, O).
Panicum atrosanguineum Hochst. ex
 A. Rich. Bor 322. (B, Bi, O).
Panicum auritum Presl ex Nees.
 Bor 324. (B, Bi, O).
Panicum austroasiaticum Ohwi.
 Bor 324. (B, Bi, O).
Panicum brevifolium Linn. Bor 324.
 (B, Bi, O).
Panicum cambogiense Balansa.
 Bor 325. (B, Bi).
 @ *Panicum elegantissimum* Hook. f.
 Bor 325. (B) [Banerjee 1971b].
Panicum fasciculatum Sw. Majum-
 dar 52. (B).
Panicum humidorum Buch-Ham. ex
 Hook. f. Bor 326. (B).
Panicum incomtum Trin. Bor 326.
 (B).
Panicum khasianum Munro ex
 Hook. f. Bor 327. (B).
Panicum maximum Jacq. Bor 327.
 (B, Bi).
Panicum miliaceum Linn. Bor 327.
 (B, Bi, O).
Panicum notatum Retz. Bor 701.
 (B, Bi, O).
Panicum paludosum Roxb. Bor 329.
 (B, Bi, O).
Panicum psilopodium Trin. Bor 329.
 (B, Bi, O).
 * *Panicum psilopodium* Trin. var.
coloratum Hook. f. (B)
 [Pal & Banerjee 1970].
Panicum repens Linn. Bor 330.
 (B, Bi, O).
Panicum sarmentosum Roxb.

- Bor 330. (B).
Panicum sumatranse Roth. ex
 Roem. et Schult. Bor 701.
 (B, BI, O).
Panicum trypheron Schult. Bor 331.
 (B, BI, O).
Paspalidium flavidum (Retz.)
 A. Camus. Bor 333. (B, BI, O).
Paspalidium geminatum (Forssk.)
 Stapf. Bor 333. (O).
Paspalidium punctatum (Burm.)
 A. Camus. Bor 333. (B, BI, O).
Paspalum cartilagineum J. S. Presl
 ex C. B. Presl. Bor 335. (BI).
Paspalum conjugatum Berg. Bor 336.
 (B).
Paspalum dilatatum Poir. Bor 338.
 (B).
Paspalum distichum Linn. Bor 338.
 (B, BI).
Paspalum orbiculare Forst. Bor 340.
 (B).
Paspalum scrobiculatum Linn.
 Bor 340. (B, BI, O).
Paspalum vaginatum Swartz.
 Bor 341. (BI).
Pennisetum clandestinum Hochst.
 ex Chiov. Bor 344. (B).
Pennisetum hohenackeri Hochst. ex
 Steud. Bor 344. (BI, O).
Pennisetum hordeoides (Lamk.)
 Steud. Bor 345. (BI, O).
Pennisetum orientale L. C. Rich.
 Bor 345. (B, BI).
Pennisetum orientale L. C. Rich. var.
triflorum Stapf. Bor 346. (BI).
Pennisetum pedicellatum Trin.
 Bor 346. (B, BI).
Pennisetum polystachyon (Linn.)
 Schult. Bor 346. (B, BI, O).
Pennisetum purpureum Schumach.
 Bor 348. (B, BI, O).
Pennisetum setosum (Swartz.)
 L. C. Rich. Bor 348. (B, BI, O).
Pennisetum typhoides (Burm.)
 Stapf et C. E. Hubb. Bor 350. (C).
Pseudechinolaena polystachya
 (H.B.K.) Stapf. Bor 352. (B).
Pseudoraphis brunoniana Griff.
 Bor 353. (B, BI, O).
Pseudoraphis minuta (Mez) Pilger.
 Bor 353. (B, BI, O).
Pseudoraphis spinescens (R. Br.)
 Vickery. Bor 353. (B, BI).
Pseudoraphis spinescens (R. Br.)
 Vickery var. *depauperata* (Nees)
 Bor. Bor 354. (B).
Sacciolepis indica (Linn.) A. Chase.
 Bor 357. (B, BI, O).
Sacciolepis interrupta (Willd.)
 Stapf. Bor 358. (B, BI, O).
Sacciolepis myosuroides (R. Br.)
 A. Camus. Bor 358. (B, BI, O).
Setaria barbata (Lamk.) Kunth.
 Bor 360. (B, BI).
Setaria glauca (L.) P. Beauv.
 Bor 360. (B, BI, O).
Setaria italica (Linn.) P. Beauv.
 Bor 362. (B, BI).
Setaria pallide-fusca (Schumach.)
 Stapf et C. E. Hubb. Bor 363.
 (B, BI, O).
Setaria palmifolia (Koen.) Stapf.
 Bor 363. (B, BI, O).
 * *Setaria paniculifera* (Steud.)
 Fourn. ex Hemsl. Bor 363. (B).
Setaria plicata (Lamk.) T. Cooke.
 Bor 364. (B, BI, O).
Setaria tomentosa (Roxb.) Kunth.
 Bor 365. (B, BI, O).
Setaria verticillata (Linn.)
 P. Beauv. Bor 365. (B, BI, O).
Setaria viridis (Linn.) P. Beauv.
 Bor 365. (B).
Spinifex littoreus (Burm. f.) Merr.
 Bor 366. (B, O).
 * *Stenotaphrum dimidiatum* (Linn.)
 Brongn. Bor 366. (B).
 O *Trachys muricata* (Linn.) Pers. ex
 Trin. Bor 369. (O).
Urochloa panicoides P. Beauv.
 Bor 372. (B, BI, O).
Urochloa panicoides P. Beauv. var.
pubescens (Kunth.) Bor. Bor 372.
 (BI).

Subfamily: POOIDEAE

Tribe: AELUROPODEAE

- Aeluropus lagopoides* (Linn.) Trin.
ex Thw. Bor 380. (B).
Tribe: AGROSTIDEAE
- Agrostis brachiata* Munro ex Hook.
f. Bor 386. (BI).
Agrostis filipes Hook. f. Bor 387.
(B).
Agrostis gigantea Roth. Bor 387. (B).
Agrostis inaequiglumis Griseb.
Bor 387. (B).
Agrostis micrantha Steud. Bor 388.
(B).
Agrostis myriantha Hook. f. Bor 388.
(B).
Agrostis nervosa Nees ex Trin.
Bor 388. (B).
Agrostis pilosula Trin. var. *pilosula*.
Bor 388. (B).
Agrostis pilosula Trin. var. *ciliata*
(Trin.) Bor. Bor 389. (B).
Agrostis sikkimensis Bor. Bor 390.
(B).
Agrostis triaristata (Hook. f.) Bor.
Bor 391. (B).
Agrostis zenkeri Trin. Bor 392. (B).
Calamagrostis emodensis Griseb.
Bor 395. (B).
Deyeuxia pulchella (Griseb.) Hook.
f. Bor 399. (B).
Deyeuxia scabrescens (Griseb.)
Munro ex Duthie. Bor 399. (B).
Muhlenbergia huegelii Trin. Bor 401.
(B).
Phleum alpinum Linn. Bor 402. (B).
Polypogon fugax Nees ex Steud.
Bor 403. (B, BI).
Polypogon monospeiensis (Linn.)
Desf. Bor 403. (B, BI).

Tribe: ARISTIDEAE

- Aristida adscensionis* Linn. Bor 407.
(B, BI, O).
Aristida cumingiana Trin. et Rupr.
Bor 409. (B, BI, O).
Aristida cyanantha Nees ex Steud.
Bor 409. (B).
Aristida depressa Retz. Bor 409. (B).
Aristida funiculata Trin. et Rupr.
Bor 410. (B, BI, O).
Aristida hystrix Linn. f. Bor 410.
(BI, O).
Aristida redacta Stapf. Bor 412.
(B, BI).
Aristida setacea Retz. Bor 412.
(B, BI, O).
Tribe: ARUNDINEAE
Arundo donax Linn. Bor 413.
(B, BI, O).
Phragmites karka (Retz.) Trin. ex
Steud. var. *karka*. Bor 416.
(B, BI, O).
Phragmites karka (Retz.) Trin. ex
Steud. var. *cincta* Hook. f. ,
Bor 416. (B).

Tribe: ARUNDINELLEAE

- Arundinella bengalensis* (Spreng.)
Druce. Bor 421. (B, BI, O).
Arundinella decempedalis (O. Ktze.)
Janowski. Bor 422. (B).
Arundinella holcooides (Kunth.)
Trin. Bor 422. (B, BI, O).
Arundinella hookeri Munro ex Keng.
Bor 422. (B).
Arundinella intricata Hughes.
Bor 422. (B).
Arundinella nepalensis Trin.
Bor 423. (B, BI).
Arundinella pumila (Hochst.)
Steud. Bor 423. (BI, O).
Arundinella setosa Trin. Bor 424.
(BI, O).
Arundinella villosa Arn. ex Steud.
Bor 426. (B).
Jansennella griffithiana (C. Muell.)
Bor. Bor 426. (B).

Tribe: AVENEAE

- Anthoxanthum hookeri* (Griseb.) Steud.) Henr. Bor 439. (B).
 Rendle. Bor 431. (B).
Anthoxanthum odoratum Linn. *Hierochloa flexuosa* Hook. f.
 Bor 441. (B).
 Bor 431. (B). *Holcus lanatus* Linn. Bor 443. (B).
Avena fatua Linn. Bor 434. (B). *Holcus mollis* Linn. Bor 443. (B).
Avena sativa Linn. Bor 434. (C). *Koeleria cristata* (Linn.) Pers.
Deschampsia caespitosa (Linn.) Bor 444. (B).
 P. Beauv. Bor 435. (B). *Trisetum flavescens* (Linn.)
Helictotrichon asperum (Munro) P. Beauv. Bor 448. (B).
 Bor. Bor 438. (B). *Trisetum spicatum* (Linn.) Richt.
Helictotrichon virescens (Nees ex Bor 448. (B).

Tribe: BAMBUSEAE

- Arundinaria maling* Gamble. *Dendrocalamus giganteus* Munro.
 Bor 1940. 42. (B). Hooker 406. (B).
Arundinaria racemosa Munro. *Dendrocalamus hamiltonii* Nees et
 Hooker 379. (B). Arn. Hooker 405. (B, Bi).
Bambusa arundinacea (Retz.) Willd. *Dendrocalamus hookeri* Munro.
 Hooker 395. (B, Bi, o). Hooker 405. (B).
Bambusa balcooa Roxb. Hooker 391. *Dendrocalamus longispathus* Kurz.
 (B, Bi). Hooker 407. (B).
Bambusa nutans Wall. Hooker 387. *Dendrocalamus patellaris* Gamble.
 (B, Bi, o). Hooker 406. (B).
 *O *Bambusa pallida* Munro. Hooker *Dendrocalamus sericeus* Munro.
 389. (B, o). Hooker 404. (B, Bi, o).
Bambusa tulda Roxb. Hooker 387. *Dendrocalamus sikkimensis* Gamble.
 (B, Bi, o). Hooker 405. (B).
Bambusa vulgaris Schrad. Hooker *Dendrocalamus strictus* Nees.
 391. (B, o). Hooker 404. (B, Bi, O).
Cephalostachyum capitatum Munro. *Neohouzeana dullooa* A. Camus.
 Hooker 412. (B). Bor 1940. 21. (B).
 * *Cephalostachyum fuchsianum* *Oxytenanthera nigrociliata* Munro.
 Gamble. Hooker 413. (B). Hooker 401. (o).
Cephalostachyum latifolium Munro. *Pseudostachyum polymorphum*
 Hooker 412. (B). Munro. Hooker 409. (B).
Cephalostachyum pergracile Munro. *Semiarundinaria pantlingii*
 Hooker 413. (B, Bi). (Gamble) Nakai. Hooker 380. (B).
Chimonobambusa griffithiana *Thamnocalamus aristatus* (Gamble)
 (Munro) Nakai. Hooker 379. (B). E. G. Camus. Hooker 382. (B).
Chimonobambusa hookeriana *Thamnocalamus falconeri* Hook. f.
 (Munro) Nakai. Hooker 382. (B). Hooker 383. (B).
Chimonobambusa intermedia *Thamnocalamus spathiflorus* (Trin.)
 (Munro) Nakai. Hooker 381. (B). Munro. Hooker 382. (B).

Tribe: BRACHYPODEAE

- Brachypodium sylvaticum* (Huds.)
 P. Beauv. Bor 450. (B).

Tribe: BROMEAE

- | | |
|---------------------------------------------------------------|-------------------------------------------------|
| <i>Bromus himalaicus</i> Stapf apud
Hook. f. Bor 454. (B). | <i>Bromus mollis</i> Linn. Bor 455. (B). |
| <i>Bromus japonicus</i> Thunb. Bor 455.
(B). | <i>Bromus ramosus</i> Huds. Bor 456. (B). |
| | <i>Bromus tectorum</i> Linn. Bor 456. (B). |
| | <i>Bromus unioloides</i> H.B.K. Bor 456
(B). |

Tribe: CENTOTHECEAE

- Centotheca lappacea* (Linn.) Desv.
Bor 457. (B, Bi, O).

Tribe: CHLORIDEAE

- | | |
|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| <i>Chloris barbata</i> Sw. Bor 465.
(B, Bi, o). | (B, Bi, o). [Jain 1967a] |
| <i>Chloris dolichostachya</i> Lagasca.
Bor 466. (B, Bi, o). | <i>Cynodon dactylon</i> (Linn.) Pers.
Bor 469. (B, Bi, o). |
| <i>Chloris montana</i> Roxb. Bor 466.
(B, Bi). | <i>Gymnopogon delicatulus</i>
(C. B. Clarke) Bor. Bor 472.
(Bi, O). |
| <i>Chloris roxburghiana</i> Schult.
Bor 468. (B). | <i>Melanocenchris jacquemontii</i>
Jaub. et Spach. Bor 473. (Bi, O). |
| <i>Chloris virgata</i> Sw. Bor 468. (B, Bi). | <i>Microchloa indica</i> (Linn. f)
P. Beauv. Bor 473. (B, Bi, o). |
| *+O <i>Cynodon arcuatus</i> J. S. Presl
ex C. B. Presl. Bor 469.
(B, Bi, o) [Jain 1967a] | <i>Oropetium thomacum</i> (Linn. f) Trin.
Bor 474. (B, Bi). |
| *+ <i>Cynodon barberi</i> Rang. et Tad. f.
<i>barberi</i> . Bor 469. (B, Bi)
[Jain 1967a] | <i>Oropetium villosulum</i> Stapf ex Bor.
Bor 474. (O). |
| *+O <i>Cynodon barberi</i> Rang. et Tad.
f. <i>longifolius</i> Jain. | <i>Schoenefeldia gracilis</i> Kunth.
Bor 474. (B, Bi). |

Tribe: DANTHONIEAE

- | | |
|----------------------------------------------------------------|----------------------------------------------------|
| <i>Danthonia cachemyriana</i> Jaub. et
Spach. Bor 478. (B). | Bor 478. (B). |
| <i>Danthonia jacquemontii</i> Bor. | <i>Eriachne pallescens</i> R. Br.
Bor 479. (B). |

Tribe: ERAGROSTEAEE

- | | |
|---------------------------------------------------------------------------|-------------------------------------------------------------------------|
| + <i>Acrachne racemosa</i> (Heyne) Ohwi.
Bor 487. (B, Bi). | Bor 492. (B, Bi, o). |
| <i>Dactyloctenium aegyptium</i> (Linn.)
P. Beauv. Bor 489. (B, Bi, o). | <i>Eleusine indica</i> (Linn.) Gaertn.
Bor 493. (B, Bi, o). |
| <i>Dactyloctenium indicum</i> Boiss.
Bor 489. (Bi). | <i>Elytrophorus spicatus</i> (Willd.)
A. Camus. Bor 493. (B, Bi, o). |
| <i>Desmostachya bipinnata</i> (Linn.)
Stapf. Bor 491. (B, Bi, o). | <i>Eragrostiella bifaria</i> (Vahl) Bor.
Bor 494. (B, Bi, O). |
| <i>Dinebra retroflexa</i> (Vahl) Panz.
Bor 491. (B, Bi). | <i>Eragrostiella brachyphylla</i> (Stapf)
Bor. Bor 494. (B, Bi, O). |
| <i>Diplachne fusca</i> (Linn.) P. Beauv.
Bor 492. (B, Bi). | <i>Eragrostiella leioptera</i> (Stapf) Bor.
Bor 495. (B, O). |
| <i>Eleusine coracana</i> (Linn.) Gaertn. | <i>Eragrostiella nardoides</i> (Trin.) Bor.
Bor 495. (Bi). |

- Eragrostis cilianensis* (All.) Vignolo-Lutati. Bor 503. (B, BI, O).
Eragrostis ciliaris (Linn.) R. Br. Bor 506. (Bi).
Eragrostis ciliata (Roxb.) Nees. Bor 506. (BI, o).
Eragrostis coarctata Stapf. Bor 507. (B, BI, o).
Eragrostis diarrhena (Schult.) Steud. Bor 507. (B, BI, o).
Eragrostis diplachnoides Steud. Bor 508. (B, BI, o).
Eragrostis gangetica (Roxb.) Steud. Bor 508. (B, BI, o).
Eragrostis japonica (Thunb.) Trin. Bor 509. (B, BI, O).
Eragrostis nigra Nees. ex Steud. Bor 511. (B).
Eragrostis nutans (Retz.) Nees ex Steud. Bor 511. (B, BI, o).
Eragrostis pilosa (Linn.) P. Beauv. Bor 512. (B, BI, O).
Eragrostis poaeoides P. Beauv. Bor 512. (B, Bi).
* *Eragrostis riparia* (Willd.) Nees. Bor 513. (B, o).
Eragrostis tenella (Linn.) P. Beauv. ex Roem. et Schult. var. *tenella*. Bor 514. (B, BI, o).
Eragrostis tenella (Linn.) P. Beauv. ex Roem. et Schult. var. *insularis* C. E. Hubb. Bor 514. (B).
Eragrostis tenuifolia (A. Rich.) Hochst. ex Steud. Bor 514. (B, BI, O).
Eragrostis tremula Hochst. ex Steud. Bor 514. (B, BI, o).
Eragrostis unioloides (Retz.) Nees ex Steud. Bor 515. (B, BI, o).
Eragrostis viscosa Trin. Bor 515. (B, BI).
Eragrostis zeylanica Nees et Mey. Bor 515. (B, BI).
Leptochloa chinensis (Linn.) Nees. Bor 516. (B, BI, O).
Leptochloa panicea (Retz.) Ohwi. Bor 517. (B, BI, o).
Myriostachya wightiana (Nees ex Steud.) Hook. f. var. *wightiana*. Bor 518. (B).
Neyraudia reynaudiana (Kunth) Keng ex Hitchc. Bor 518. (B, Bi).
Tripogon bromoides Roem. et Schult. Bor 521. (Bi, O).
Tripogon capillatus Jaub. et Spach. Bor 521. (BI, O).
Tripogon filiformis Nees ex Steud. Bor 521. (B).
Tripogon jacquemontii Stapf. Bor 522. (Bi, O).
Tripogon roxburghianus (Steud.) Bhide. Bor 524. (O).

Tribe: FESTUCEAE

- Dactylis glomerata* Linn. Bor 530. (B).
Festuca cumminsii Stapf. Bor 538. (B).
Festuca leptopogon Stapf. Bor 538. (B).
Festuca ovina Linn. Bor 539. (B).
Festuca polycolea Stapf. Bor 540. (B).
Festuca rubra Linn. Bor 540. (B).
Festuca undata Stapf. Bor 542. (B).
Festuca valesiaca Schleich. ex Gaud. Bor 542. (B).
Lolium multiflorum Lam. Bor 545. (B).
Lolium perenne Linn. Bor 545. (B, Bi).
Lolium temulentum Linn. Bor 546. (Bi).
Poa alpina Linn. Bor 555. (B).
Poa annua Linn. Bor 555. (B).
Poa khasiana Stapf. Bor 557. (B).
Poa ludens Stewart. Bor 558. (B).
Poa nemoralis Linn. Bor 558. (B).
Poa pagophila Bor. Bor 558. (B).
Poa pratensis Linn. Bor 559. (B).
Poa sikkimensis Bor. Bor 560. (B).
Poa stewartiana Bor. Bor 561. (B).
Poa supina Schrad. Bor 561. (B).
Poa tibetica Munro ex Stapf. Bor 561. (B).
Poa trivialis Linn. Bor 561. (B).

Tribe: GARNOTIEAE

- Garnotia stricta* Brongn. Bor 569. (B, BI, O).

Tribe: GLYCERIEAE

Glyceria tonglensis C. B. Clarke.
Bor 571. (B).

Tribe: ISACHNEAE

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|-----------------------------------------------------------------------------------------|---------------------------------------------------------------|
| <i>Coelachne simpliciuscula</i> (Wight et Arn.) Munro ex Benth. Bor 576.
(B, BI, O). | <i>Isachne globosa</i> (Thunb.) O. Ktze.
Bor 580. (B, BI). |
| <i>Isachne albens</i> Trin. Bor 579.
(B, BI, O). | <i>Isachne himalaica</i> Hook. f. Bor 581.
(B). |
| <i>Isachne dispar</i> Trin. Bor 580. (BI, O). | <i>Isachne miliacea</i> Roth. Bor 582.
(B, BI). |
| <i>Isachne elegans</i> Dalzell ex Hook. f.
Bor 580. (BI, O). | <i>Isachne sikkimensis</i> Bor. Bor 582.
(B). |

Tribe: ORYZEAE

- | | |
|---------------------------------------------------------------------------|------------------------------------------------------------------------------|
| <i>Hygroryza aristata</i> (Retz.) Nees ex Wight et Arn. Bor 597. (B, BI). | <i>Oryza meyeriana</i> (Zoll. et Mor. ex Steud.) Baill. Bor 604. (B, BI, O). |
| <i>Leersia hexandra</i> Swartz. Bor 599.
(B, BI, O). | <i>Oryza minuta</i> J. S. Presl ex C. B. Presl. Bor 605. (B, BI). |
| <i>Oryza coarctata</i> Roxb. Bor 604. (B). | <i>Oryza rufipogon</i> Griff. Bor 605. (B). |
| <i>Oryza jeyporensis</i> Govinda. et Krishna. Bor 606. (O). | <i>Oryza sativa</i> Linn. Bor 605.
(B, BI, O). |

Tribe: PEROTIDEAE

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|-------------------------------------------------------------------|----------------------------------------------------------------|
| <i>Perotis hordeiformis</i> Nees apud Hook. et Arn. Bor 611. (B). | <i>Perotis indica</i> (Linn.) O. Ktze.
Bor 611. (B, BI, O). |
|-------------------------------------------------------------------|----------------------------------------------------------------|

Tribe: PHALARIDEAE

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|----------------------------------------------------|--------------------------------------------------|
| <i>Phalaris arundinacea</i> Linn. Bor 615.
(B). | <i>Phalaris minor</i> Retz. Bor 616.
(B, BI). |
|----------------------------------------------------|--------------------------------------------------|

Tribe: SPOROBOLEAE

- | | |
|--------------------------------------------------------------------|--------------------------------------------------------------------|
| <i>Crypsis schoenoides</i> (Linn.) Lamk.
Bor 622. (BI). | Bor 632. (B, BI, O). |
| <i>Sporobolus coromandelianus</i> (Retz.) Kunth. Bor 627. (B, BI). | <i>Sporobolus tetragonus</i> Br. Bor 633.
(BI). |
| <i>Sporobolus diander</i> (Retz.) Beauv.
Bor 629. (B, BI, O). | <i>Sporobolus tremulus</i> (Willd.) Kunth.
Bor 633. (B, BI, O). |
| <i>Sporobolus fertilis</i> (Steud.) Clayton.
Bor 630. (B, BI). | <i>Sporobolus virginicus</i> (Linn.) Kunth.
Bor 634. (B). |
| <i>Sporobolus piliferus</i> (Trin.) Kunth. | <i>Sporobolus wallichii</i> Munro ex Trin. Bor 634. (BI). |

Tribe: STIPEAE

- | | |
|----------------------------------------------------------|--------------------------------------------------|
| <i>Oryzopsis aequiglumis</i> Duthie.
Bor 639. (B). | <i>Stipa purpurea</i> Griseb. Bor 645. (B). |
| <i>Stipa mongholica</i> Turcz. ex Trin.
Bor 645. (B). | <i>Stipa roylei</i> (Nees) Mez. Bor 646.
(B). |

Tribe: THYSANOLAENEAE

Thysanolaena maxima (Roxb.)
O. Ktze. Bor 650. (B, BI, O).

Tribe: TRITICEAE

<i>Agropyron canaliculatum</i> Nevski. Bor 659. (B).	<i>Elymus dasystachys</i> Trin. Bor 669. (B).
<i>Agropyron semicostatum</i> Nees ex Steud. Bor 665. (B).	<i>Elymus nutans</i> Griseb. Bor 670. (B).
<i>Agropyron thoroldianum</i> Oliver. Bor 667. (B).	<i>Hordeum vulgare</i> Linn. Bor 677. (C).
	<i>Triticum aestivum</i> Linn. Bor 679. (C).

Tribe: ZOYSIEAE

<i>Tragus biflorus</i> Schult. Bor 682. (B, Bi, O).	<i>Zoysia matrella</i> (Linn.) Merr. Bor 684. (B, O).
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