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Ecological and biogeographical distribution of some *Dichanthium* Willemet species from Buldhana district Maharashtra India

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Abstract
Dichanthium is one of the dominant genus of family Poaceae. Locally called marvel. Flora of Buldhana district has been already studied by Diwakar and Sharma (2000). During last 24 years no survey was conducted of the area. It is Perennial grasses, tufted, leaves narrow, linear leaves with a smooth or slightly rough texture. Inflorescence Panicle-like or raceme-digitate or subdigitate, flowering structures with spikelets. Many species are used as grazing and are drought-tolerant, flourish in arid and semi-arid regions

During present study visited to the different areas of Buldhana district and 4 different species of Dichanthium have been collected. i.e. *D. annualatum*, *D. pertusum, D. caricosum, and D. foveolatum.* During collection field diary has been maintained. Field characters such as density, frequency, height, habitat, etc. were recorded. After collection specimens were dried with the help of plant presser. After drying specimens were mounted on herbarium sheets by stiching. After preparation of herbarium all specimens were observed under stereoscopic binocular microscope. Spikelets were dissected, glumes, lemmas, palea were observed; specimens were identified with the help of standard floras i.e. Grasses of Maharashtra by Dr. G. G. Potdar et al., Grasses of Marathawada by Dr. B. W. Patunkar, Flora of Marathawada by Dr. V. N. Naik, Flora of British India by Hooker, and all available literature. After identification all the specimens were discribed on the basis of actual specimens, during description all the vegetative as well as floral characters were covered.

Keywords: Dichanthium, Spikelets, Herbarium, Flora, Sterioscopic Binocular.

INTRODUCTION

Buldhana district is one of the most diversified districts in Vidarbha. It is situated at the western border of the Vidarbha region and is 500 Km away from the capital, Mumbai. It is surrounded by Madhya Pradesh in the north, Akola, Washim, and Amravati districts in the East, Jalna in the South, and Jalgaon and Aurangabad districts in the West. Buldhana district lies between 19^0 51' to 21^0 17' North Latitude and 75^0 57' to 76^0 49' East Longitude. Buldhana district has thirteen Talukas viz, Buldhana, Chilhali, Deulgaon Raja, Malkapur, Motala, Nandura, Mehkar, Shindhkhed Raja, Lonar, Khamgaon, Shegaon, Jalgaon Jamod and Sangrampur.

It has a total area of 9640sq. Km out of which 16% of the area under forest, most of which is tropical dry deciduous. It has two hilly ranges i.e. Satpuda and Ajanta which cover some parts of it. Buldhana district has notable floristic sites, most of the area under the Sanctuaries such as Dnyanganga and Ambabarwa sanctuaries (situated in Jalgaon jamod tehsil) rich in floral diversity has come core area which remains unexplored yet. Lonar lake is declared an

international heritage which also rich in various microphytes. The main rivers of district are Purna, Penganga, Khadkpurna, Mun, Koradi, and Nalganga. The annual rainfall in the region varies from 538.70 mm to 844.96 mm. Climate is hot and dry, whereas the area has the black cotton and gravelly soil.

Flora of Buldhana District has been already studied by P. G. Diwakar and B. D. Sharma during 1989 and published in 2000.

MATERIALSANDMETHODS

I. Field work – systematically explored study areas one by one in every season.Focus of exploration that are covered by grassland vegetation andgrasses of irrigated and unirrigated field. Field observation will be noted down in fielddiarygivingfieldnumbertoeveryplantcollected.Thiswillhelptoknowthefrequency; relative abundance in the area, phenological variations and life cycle of themembers.

II. After tentatively identifying the plants in the field, specimens has been critically studiedinthelaboratoryandidentificationwillbeconfirmedwiththehelpofstandardreference floras like, Flora of British India, (Hooker; 1872-1997), Flora of BombayPresidency(Cook1901-1908),FloraofMarathawada(Naik1998)etc.andMonographs.

III. All the specimens collected will be properly dried, poisoned, and mounted on herbarium sheets. For critical cases BSI (Pune) will be consulted to match thespecimens.

IV. Artificialkeyhasbeenprovidedforspecies.Asforaspossiblelatestnomenclature has been given. Population variation will be criticallystudied. Each description has been supported by note on distribution and herbariumspecimennumberof thespecies.

OBSERVATION AND RESULTS

DICHANTHIUM Willemet

1a – Raceme solitary……*D. foveolatum*
1b – Raceme digitate or subdigitate…… 2
2a – Peduncle hairy below the raceme……*D. caricosum*
2b – Peduncle not hairy below the raceme……... 3
3a – Spikelets violet……*D. annulatum*
3b – Spikelets whitish green……*D. pertusum*

Diachanthiumannulatum(Forssk.) Stapf in Prain, Fl. Trop. Afr. 9: 178. 1917; Blatt. & McCann, Bombay Grass. 94. 1935; Bor, Grass. Burma Ceylon India Pakistan 133. 1960; Laxmi. in sharma *et al.*(eds.), Fl. Maharashtra, Monocot. 452. 1996; S. Moulik, Grass. Bamb. India 1: 271. 1997; Naik, Fl. Marathawada 2: 1012. 1998. *Andropogon annulatus*Forssk., Fl. Aegypt-Arab. 173. 1775; Hook. f., Fl. Brit. India 7: 196. 1896; Cooke, Fl. Presi. Bombay 3: 507. 1958 (Repr. ed.).

Vernacular name : Marvel

Perennial. Culms tufted, terete, 50-150 cm tall, erect or geniculately ascending, nodes bearded. Leaf sheath compressed, 4-12 cm long, glabrous, ligule membranous, 1.5-2 mm long. Leaf blade flat, linear-ovate, 7-25 × 0.3-0.7 cm, glabrous or sparsely hairy, acuminate at apex. Raceme 3-10, subdigitate, 2.5-7.5 cm long, peduncles glabrous, joints 1.5-2 mm long, ciliate. Sessile spikelet obovate, 3-4 mm, awned, callus obtuse, bearded. Lower glume membranous, narrowly obovate, 3-3.5 × 0.8-1 mm, margins scaberulous, 7-9 nerved, 2-keeled, apex obtuse. Upper glume membranous, narrowly elliptic, 3-3.5 × 0.8-1 mm, margins inflexed, ciliate, 3-nerved, apex acute. Lower lemma hyaline, narrowly ovate, 2.3-2.5 × 0.4-0.5 mm, margins ciliate, nerveless, apex acute. Palea abscent. Upper lemma a base of hyaline awn, 1.3-1.5 × 0.1-0.2 mm, linear, 1-nerved, awned, geniculate, 15-20 mm long. Palea abscent. Lodicules 2. Stamens 3, anthers 1.5-1.6 mm. Pistil 1.5-2 mm long, ovary 0.5 × 0.2 mm. Caryopsis elliptic-oblong. Pedicel 1.5-2 mm long, margins hairy. Pedicelled spikelet 3-4 × 0.8-1 mm. Lower glume membranous, obovate, 3.5-4 × 0.8-1 mm, sparsely hairy on dorsal side, margins inflexed, 7-9 nerved, 2-keeled, apex obtuse. Upper glume membranous, narrowly elliptic, 2.5-3 × 0.5-0.6 mm, margin inflexed, ciliate, 5-nerved, apex acute. Lower lemma hyaline, narrowly obovate, 1.6-1.8 × 0.4-0.6 mm, margin slightly inflexed, nerveless.

Field notes:-common in road sides and grassland.

Dichanthium caricosum(L.) A Camus in Bull. Mus. Hist. Nat. Paris 27: 549. 1921; Blatt. & McCann, Bombay Grass. 92. 1935; Bor, Grass. Burma Ceylon India Pakistan 134. 1960; Laxmi. in Sharma *et al.* (eds.), Fl. Maharashtra, Monocot. 453. 1996; S. Moulik, Grass. Bamb. India 1: 273. 1997; Naik, Fl. Marathawada 2: 1013. 1998. *Andropogon caricosus* L., Sp. Pl. ed. 2. 1480. 1763; Hook. f., Fl. Brit. India 7: 196. 1896; Cooke, Fl. Presi. Bombay 3: 507. 1958 (Repr. ed.). *Dichanthium aristatum*(Poir.) C. E. Hubb. in Kew Bull. 1939: 654. 1940; Bor, *op. cit*. 134.

Vernacular names: Marvel.

Perennial. Culms tufted, terete, 50-180 cm tall, erect or geniculately ascending, nodes glabrous or bearded. Leaf sheath compressed 5-15 cm long, glabrous, ligule ciliate membranous. Leaf blade flat, linear ovate, 10-40 x 0.2-1 cm, glabrous, apex acuminate. Raceme 1-7, subdigitate, 5-10 cm long, joint 1.5-2 mm long, hairy along one margin. Sessile spikelet obovate, 4-5 x 1.8-2 mm, awned, callus short, bearded. Lower glume membranous, obovate, 4-5 x 1.8-2 mm, puberulous on dorsal side, margins inflexed, 9-11-nerved, 2-keeled, keel scabrous, apex obtuse. Upper glume subcoriaceous, narrowly elliptic, 4.8-5 x 1-1.2 mm, minutely hairy, margins inflexed, ciliate, 3-nerved, apex obtuse. Lower lemma membranous, narrowly ovate, 4.3-4.5 x 0.8-1 mm, margins inflexed, ciliate, nerveless, apex obtuse. Palea absent. Upper lemma hyaline to a base of awn, linear, 2.8-3 x 0.1-0.2 mm, 1-nerved, awned, geniculate, 25-30 mm long. Palea hyaline, narrowly ovate, 2.8-3 x 0.3-0.5 mm, nerveless, apex acuminate. Lodicules 2. Stamens 3, anthers 2.8-3 x 0.5-0.6 mm. Pistil 2.8-3 mm long, ovary 0.6 x 0.3 mm. Caryopsis linear. Pedicel 1-1.5 mm long, hairy along one margins. Pedicelled spikelet obovate, 4-5 x 2.3-2.5 mm. Lower glume membranous, obovate, 4-5 x 2.3-2.5 mm, minutely hairy on dorsal side, 17-19-nerved, 2-keeled, keels slightly winged, scabrous, apex obtuse. Upper glume membranous, narrowly elliptic, 4.5-5.2 x 1-1.2 mm, margins inflexed, ciliate, 3-nerved, 2-keeled, ciliate, apex acute. Lower lemma

membranous, narrowly elliptic, 4.3-4.5 x 1-1.2 mm, margins inflexed, nerveless, apex acute. Palea absent. Upper lemma hyaline, narrowly elliptic, 4.3-4.5 x 0.8-1 mm, apex obtuse. Palea hyaline, linear, 3.3-3.5 x 0.2-0.3 mm, nerveless, apex acute. Lodicules 2. Stamens 3, anthers 2.8-3 x 0.2-0.3 mm.

Field notes:-common weeds in crop field.

Dichanthium foveolatum (Del.) Roberty in Boissiera 9: 170. 1960; Cope in Kew Bull. 35: 703. 1980; Laxmi. in Sharma *et al.* (eds.), Fl. Maharashtra, Monocot. 455. 1996. *Andropogon foveolatus* Del. Fl. d'Egypte 16, t. 8. F. 2. 1812; Hook. f., Fl. Brit. India 7: 168. 1896; Cooke, Fl. Presi. Bombay 3: 496. 1958 (Repr. ed.). *Eremopogon foveolatus* (Del.) Stapf in Prain, Fl. Trop. Afr. 9: 183. 1917; Batt. & McCann, Bombay Grass. 96. 1935; Bor, Grass. Burma Ceylon Pakistan 148. 1960; S. Moulik, Grass. Bamb. India 1: 275. 1997; Naik, Fl. Marathawada 2: 1042. 1998.

Annual or perennial. Culms tufted, terete, 50-80 cm tall, erect or geniculately ascending, very slender, glabrous, simple or sparingly branched, internode 6-7.5 cm long, straw colour at maturity, nodes bearded. Leaf sheath terete, 3.5-5 cm long, glabrous shorter than internodes, basal sheaths bladeless and silky villous, ligule membranous, truncate, ciliate. Leaf blade flat or convolute, linear, 4.3-9 x 0.1-0.2 cm, glabrous or sparsely hairy, apex acuminate.

Raceme solitary, 2.6-5 cm long, terminal, slender, silky, purplish, joints 1.6-1.8 mm long, densely hairy. Sessile spikelets oblong lanceolate, 3-3.2 x 0.8-1 mm, glabrous, awned, pitted, obtuse, callus short, bearded. Lower glume membranous, elliptic, 2.8-3 x 0.8-1 mm long, margins inflexed, 5-nerved, pitted, 2-keeled, apex acute. Upper glume membranous, narrowly elliptic, 2.8-3 mm long, glabrous, 5-nerved, apex acute. Lower lemma empty, hyaline, narrowly ovate, 2-2.5 mm long, nerveless, apex acute, epaleate. Upper lemma hyaline to geniculate awn, 1.3-1.5 x0.1-0.2 mm, awned, awn geniculate, 15-20 mm long, epaleate. Lodicules 2. Stamens 3, anthers 1.2-1.4 mm long. Pedicels slender, 1.5-1.7 mm long, margins silky. Pedicelled spikelets narrowly elliptic, 3-3.5 mm long, pitted. Lower glume membranous, narrowly elliptic, 3-3.4 mm long, margins inflexed, 5-7 nerved, pitted above the middle, 2 keeled, keels ciliate above the middle, apex acute. Upper glume membranous, narrowly elliptic, 3-3.2 mm long, 3-nerved, keels ciliate above the middle, apex acute. Lower lemma empty, hyaline, narrowly ovate, 2 mm long, nerveless, apex acute, epaleate. Lodicules 2. Stamens 3, anthers 1.5-2 mm long.

Field notes:-Frequent in open grassland.

Dichanthium pertusum (L.) Clayton in Kew Bull. 32: 4. 1977; Deshp. in Fasc. Fl. India 15: 22. 1984; Laxmi. in sharma *et al.* (eds.), Fl. Maharashtra, Monocot. 459. 1996; Naik, Fl. Marathawada 2: 1019. 1998. *Holcus pertusus* L., Mant. 2: 301. 1771. *Andropogon pertusus* (L.) Willd., Sp. Pl. 4: 922. 1806; Hook. f., Fl. Brit. India 7: 173. 1896; Cooke, Fl. Presi. Bombay 3: 497. 1958 (Repr. ed.). *Amphilophis pertusa* (L.) Nash ex Stapf in Agr. News W. Indies 15: 179. 1916; Blatt. & McCann, Bombay Grass. 84. 1935. *Bothriochloa pertusa* (L.) A. Camus in Ann. Soc. Linn. Lyon, 1930, n.s. 76: 164. 1931; Bor, Grass. Burma Ceylon India Pakistan 109. 1960; S. Moulik, Grass. Bamb. India 1: 267. 1997.

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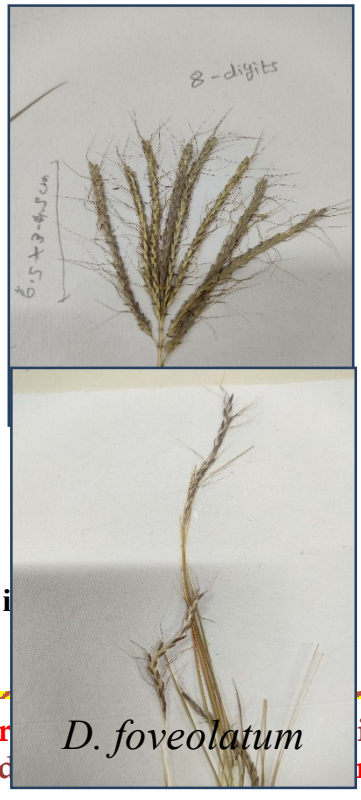
Perennial. Culms tufted, terete, 10-50 cm tall, erect or decumbent, nodes bearded. Leaf sheath compressed, 1-keeled, 2-10 cm long, glabrous or hairy, mouth bearded, ligule membranous. Leaf blade flat, linear, 1.5-20 × 0.2-0.5 cm, glabrous or hairy, apex acuminate. Racemes 3-8, digitate or subdigitate, 2-5 cm long, joints linear, 2-2.5 mm long, densely villous along the margins, translucent groove in the center, callus short, bearded. Sessile spikelets narrowly elliptic, 3-4 mm long, awned. Lower glume coriaceous, narrowly ovate-elliptic, 3-4 mm long, 7-9 nerved, hairy below the middle, with deep 1 or 2 circular pits above the middle, apex obtuse, shortly 2-fid. Upper glume subcoriaceous, boat shaped, 3-4 mm long, 3-5 nerved, apex acute. Lower lemma hyaline, narrowly ovate, 2.5-3 mm long, nerveless, apex acute. Upper lemma hyaline, 1-2 mm long, apex bearing geniculate awn, awn 14-20 mm long. Lodicules 2. Stamens 3, anthers 1.4-1.8 mm long. Grain oblong. Pedicels linear, 2-2.6 mm long, villous along the margins, translucent groove in the center. Pedicelled spikelet narrowly elliptic 3-4 mm long. Lower glume subcoriaceous, narrowly elliptic, 3-4 mm long, 7-11 nerved, with or without pit, apex acute. Upper glume membranous, narrowly elliptic, 3-4 mm long, 3-5 nerved, apex acute. Lemma hyaline, narrowly obovate, 2.5-3 mm long, nerveless, apex truncate. Palea absent. Lodicules 2. Stamens 3, anthers 1.2-1.5 mm long.

Field notes:-common in road sides.

Sr. no.	Name of species	Locality	Abundance
1.	*D. annulatum*	Jalgao jamod & all tehsils	common
2.	*D. caricosum*	Jalgao jamod & all tehsils	common
3.	*D. foveolatum*	Buldhana, Jalgao jamod, Lonar, Motala, Malkapur, Mehkar.	frequent
4.	*D. pertusum*	Khamgaon, Malkapur, Nandura, Shegaon.	common



D. foveolatum


D. pertusum

Conclusi

During present study visited to the different areas of Buldhana district and 4 different species of Dichanthium have been collected. i.e. *D. annualatum*, *D. pertusum, D. caricosum, and D. foveolatum.* Out of these *D. annualatum*and *D. caricosum*are common throughout the district.*D. pertusum*and *D. foveolatum*are found common in some tehsils.

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