



RESEARCH ARTICLE

## Addition to the Grass Flora of Madhya Pradesh State, India

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### ABSTRACT

In a recent floristic field survey of overall vegetation to some border areas of Maharashtra and Madhya Pradesh, we have collected the numerous grasses. After critical laboratory observation of grass species and literature survey has revealed the addition of two new grass species for the Madhya Pradesh state. Their vegetative and reproductive morphology was studied in detail and differences with their allied species are mentioned here.

Keywords: Grass, Madhya Pradesh, New distribution, Poaceae

## INTRODUCTION

The documentation and diversity of all vegetational components including grasses have gained momentum in the last few years to assess the grass diversity of our nation. Grasses as a whole, are mostly herbaceous members in the plant kingdom and show great adaptability in their morphological and reproductive strategies for their own survival. The earliest report for grasses from British India was made by Hooker (1896). He described 146 genera and 845 species of grasses in the flora of British India. Later on, Bor (1960) has given a detailed account of 250 genera and 1200 species along with a scientific description of the grasses of India, Burma and Ceylon. Flora of Bombay presidency has been described by the Cook (1902-1910) and grasses of Bombay Presidency by Blatter and Mc Cann (1934), including the newly described and reported grasses with nomenclatural changes. Cook and Moulik (1997) have given an account of the aquatic and surface grasses and bamboos of India.

During recent field exploration in different border parts of the forest vegetation for documentation and inventorization for Convolvulaceae members of Madhya Pradesh and nearby areas, we have encountered some noteworthy grass species and were collected. After critical morphological observation and thorough review of the literature (Cooke, 1902-08; Blatter and Mc Cann, 1935; Raole and Desai, 2008; Desai and Raole, 2012) two of them turned out as an addition to the state flora of Madhya Pradesh as their presence was not reported earlier (Sinha et al. 2001; Khanna et al. 2001, 2009; Jha and Khanna, 2002; Sikarwar et al., 2010; Sinha and Shukla, 2009; Ray and Sainkhediya, 2012; Sikarwar and Tiwari, 2014; Dashahre et al., 2020). Moreover, Tiwari (2017) has reported 22 additional types of grass from central India but has not included these two kinds of grass in his report. Over and above, Kellogg et al (2020) have not given any account of these grasses' habitats and locations from the Madhya Pradesh state. Their morphological differences and habitat preference, distribution status, and herbarium details are mentioned here.

## MATERIAL AND METHODS

During recent botanical exploration in different parts of Madhya Pradesh forests, the authors could collect some variable grasses. The gross morphology of different vegetative and reproductive features was studied with the help of a Stereomicroscope. Plant identification and confirmation have been done with the help of available floras and the above-mentioned works of literature. Voucher specimens of all the grasses were submitted to the BARO herbarium ('Herbarium Universitas Barodensis',

Department of Botany, The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat), KKO/48, and KKO/51. The accepted scientific name was followed from the IPNI database (<http://www.ipni.org/>).

## RESULT AND DISCUSSION

After critical morphological studies and thorough review of literature below mentioned grass taxa are found to be an addition to the Madhya Pradesh state. Hence, in the present communication, they are reported as an addition to the flora of Madhya Pradesh and a new distributional range for the Indian subcontinent.

### Species Description:

#### 1. *Spodiopogon aristatus* R. J. Desai & Raole

Perennial. Culms slender, creeping and rooting at the base, 40 – 70 cm tall, leafy; nodes glabrous; internodes 5 – 10 cm long. Leaf sheath compressed, loose, 3 – 8 cm long, sparsely hairy, glabrescent; auricles membranous, confluent with ligule; ligule a ciliate membrane, 1.5 – 2 mm long, 2- or 3-partite; pseudo-petioles 1 – 7 cm long, blades elliptic-lanceolate, flat, acuminate, sparsely hairy on both sides, with a distinct white coloured midrib, 5 – 14 × 1.5 – 3 cm; uppermost leaf often reduced to a lanceolate spathe partially enclosing base of raceme, spathe 5 – 10 × 0.4 – 0.8 cm. Inflorescence terminal and axillary, 5 – 12 cm long; erect, densely flowered; rachis jointed, articulated below callus, villous, hairs 4 – 5 mm long, whitish or purplish. Sessile spikelet elliptic, up to 9 mm long including ciliate callus. Lower glume broadly ovate, toothed at apex, both lobes aristate, 6 – 7-nerved, hairy, 6 – 7 × 3 – 3.5 mm. Upper glume broadly ovate, aristate, arista 1 – 3 mm long, 7-nerved, nerves raised, midvein ciliate, 7 – 9 × 3 – 4 mm. Lower lemma oblong-lanceolate, toothed, hyaline, glabrous, 2-nerved, 5 – 5.5 × 2 – 2.5 mm. Lower palea hyaline, oblong, truncate, nerveless, glabrous, 4 – 4.5 × 1.5 – 2 mm. Floret male, stamens 3, anther 3 – 3.5 mm long, filament short. Upper lemma deeply cleft into 2 acute lanceolate lobes, hyaline, 5 – 5.5 × 1 – 1.5 mm, awn up to 18 – 22 mm long, bent, twisted, scabrid or with papillae-like projections. Upper palea wedge shaped, hyaline, truncate, glabrous, 2.5 – 3 × 2 – 2.5 mm. Floret bisexual, stamens 3, anthers 2.5 – 3 mm long, styles 2, c. 3 mm long, stigmas plumose, purplish, 2 – 2.5 mm long; caryopsis laterally compressed, glabrous, shiny, hilum basal and embryo reaching to middle of grain, pale white-brown, 2 – 2.5 × 0.5 – 0.8 mm. Pedicellate spikelets shorter than the sessile, up to 6 – 6.5 mm long, obliquely ovoid, pedicel like rachis, 4 – 4.5 mm long, thick, clavate, villous, hairs 4 – 5 mm long, whitish or purplish, confluent with thick callus; articulation below callus. Lower glume broadly ovate, 5 – 6 × 2.5 – 3 mm, 6 or 7-nerved, hairy, apex dentate. Upper

glume broadly ovate,  $6 - 6.5 \times 3 - 3.5$  mm, 7-nerved, nerves raised, midvein ciliate, arista  $0.5 - 2$  mm long. Lower lemma oblong-lanceolate, acute, hyaline, glabrous, 1-nerved,  $5 - 5.5 \times 2 - 2.5$  mm, epaleate. Floret sterile. Upper lemma deeply cleft into 2 acute lanceolate lobes, hyaline,  $4.5 - 5 \times 1 - 1.5$  mm, awn up to  $18 - 22$  mm long, bent, twisted, scabrid or with papillae like projections. Upper palea wedge shaped, hyaline, truncate, glabrous,  $2.5 - 3 \times 2 - 2.5$  mm. Floret bisexual; stamens 3, anthers  $2.5 - 3$  mm long, styles 2, c.  $3$  mm long, stigmas plumose, purplish,  $2 - 2.5$  mm long; caryopsis laterally compressed, glabrous, shiny, hilum basal and embryo reaching to middle of grain, pale white-brown,  $2 - 2.5 \times 0.5 - 0.8$  mm (Fig-1).



Figure 1 - *Spodiopogon aristatus* A - Habit, B - Inflorescence, C - Spikelet

## 2. *Desmostachya pingalaiae* Raole & R. J. Desai

Perennial; rootstock stout, creeping; stolons covered with shining sheaths; culms tufted, smooth, erect, stout, 40-70 cm height; nodes glabrous; internodes 7-11 cm long; leaves rigid, linear, acuminate, tips filiform, entire, glabrous; leaf sheath 8-9 cm long, basal fascicled, 20 - 35 cm; ligules hairy; inflorescence paniculate, erect, narrowly pyramidal, 25-30 cm long; peduncle terrete, glabrous; rachis many, short, 2.0-3.0 cm long (Fig-2); spikelets sessile, crowded, 2-seriate, deflexed, oblong-ovate, compressed, pale brown and often tinged violet-purple, shining, 0.15-0.07 cm, up to 6-flowered; lower glume keeled, 1-nerved, 0.08-0.07 cm; upper glume ovate, acute, coriaceous, 1-nerved, 0.12-0.10 cm; lemma ovate, acute, margin hairy, 3-nerved, 0.15-0.12 cm; palea lanceolate, acuminate, 1-nerved, 0.15-0.07 cm; stamens three, anthers yellow-pale brown, 0.10 cm, filament 0.10 cm; ovary globose-ellipsoid, hyaline opaque, 0.05 cm; style long, bifid; stigma hairy, whitish, style and stigma 0.10 cm; caryopsis ellipsoid-subglobose. Flowering and fruiting throughout the year.

## DISTRIBUTION

Both the species were collected from the road side of Nandiya to Sirvel (21.423563N, 75.696302E; 21.433172N, 75.682259E) in Madhya Pradesh.

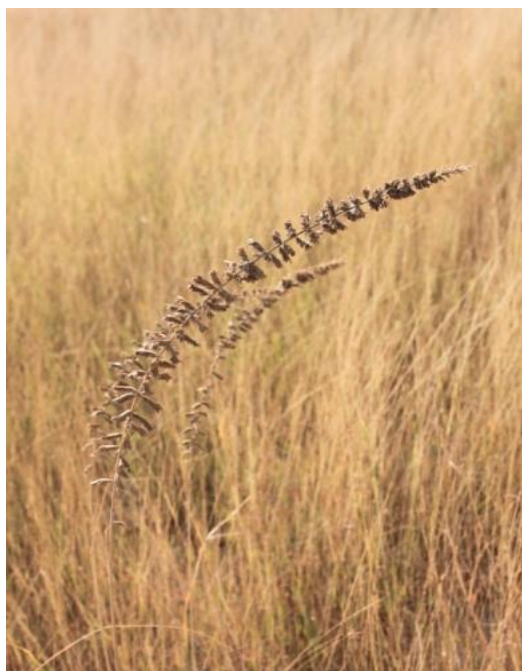


Figure 2 - Inflorescence of *D. pingalaiae*

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