

INTRODUCTION

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Grasses are the most important group of flowering plants providing major requirements of human being. Poaceae to which grasses belong form fourth largest family of Angiosperms. It comprises about 700 genera and 10,000 species distributed throughout the world in various kinds of habitats (Watson & Dallwitz, 1992; Clayton & Renvoize, 1986)). This family is represented in India, by about 268 genera and more than 1200 species (Karthikeyan *et al.* 1989; Moulik, 1997). The most critical account of grasses of India includes that of Bor (1960). High diversity of grasses and grasslands is a characteristic feature of Indian vegetation. About 35% of total grass genera and 12% of world's total grasses are reported to occur in India.

Grasses are rather uniformly distributed on all continents and in all climatic zones of the world. Grasslands occupy about 25% of earth's vegetation cover and contribute considerably to the biomass production. Grasses show high adaptability to various kinds of habitats like marshes, desert, praries, woodlands, sandy substratum, rocky substratum and almost all kinds of soils from tropics to polar region and from sea level to the highest elevations. They are even found in Arctic, Antartic and ice covered region of the world. They grow almost in all kinds of situations and climatic zones of the world indicating their high adaptability. They may be annual, perennials and range from annual herbs to arborescent bamboos.

The grasses are of major economic as well as ecological importance and play major role in providing food, fodder, soil cover and biomass production. All our staple crops viz. rice, wheat, oats, rye, barley, maize, sorghum, millet and sugarcane are grasses. The first top ten crops of the world are the grasses, which we use to sustain ourselves and live-stock. About 70% of the farmlands of the world are cultivated with crop grasses. Paddy is the most important crop which provides staple food for more than half of the world's population. Sugarcane is a major tropical cash crop and principal source of sugar for world.

Grasses are of great economic potential in many ways including food, fodder, shelter, biomass, paper, meat and milk production, restoration of degraded ecosystem and maintenance of world's biodiversity. Grasses are good soil binders and moisture

conservers and make good turfs and lawns. Some grasses are of medicinal value, others yield essential oils and some of them are exploited commercially. Grasses are

also used for ornamental purposes and for miscellaneous uses such as thatching, matting, making ropes, furniture, stuffing for pillows, brooms, cigarette and cherrot wrappers, Hindu ritual and musical instruments etc. Our meat and milk products come from grasses. Our dairy industries are mainly dependent upon grasses and India is the largest producer of milk in the world. The grasses have good potentials in sustainable development of the country as well as conservation of both plant and animal diversity.

Recent taxonomic accounts on grasses of India have reported an occurrence of about 440 grass species strictly endemic to India and 50% of them are concentrated in Peninsular India (Jain, 1986). There are 17 genera endemic to India of which three grow in the Himalayan region, while the remaining in Peninsular India. About 225 species and 21 varieties are endemic to Peninsular India. Of the 225 endemic species, 124 occur in Maharashtra. Of the 14 genera endemic to Peninsular India, 11 are monotypic. These endemic genera are 1) *Bhidea* (3), 2) *Chandrasekharania* (1), 3) *Indopoa* (1), 4) *Danthonidium* (1), 5) *Glyphochloa* (10), 6) *Hubbardia* (1), 7) *Lophopogon* (2), 8) *Pogonachne* (1), 9) *Limnopoa* (1), 10) *Manisuris* (1), 11) *Pseudodichanthium* (1), 12) *Silentvalleya* (1), 13) *Trilobachne* (1) and 14) *Triplopogon* (1).

Grasses are considered to be taxonomically difficult group of flowering plants because of small size of floral organs, special terminology and complicated structure of spikelet and inflorescence. Therefore, the study on grasses continued to be neglected especially in India. 'Grasses of Burma, Ceylon, India and Pakistan' by N. L. Bor (1960) is the only standard comprehensive reference work on Indian grasses. Taking into account the need of trained taxonomists in grasses, Ministry of Environment and forest initiated a program on capacity building in grass systematic and Bamboos in 2000 and same program is continued for 11th plan of the country. Interrelationship of different grass genera especially endemic to India are little understood. These genera need to be investigated for their morphological, anatomical, cytological, embryological, physiological etc. characters and peculiarities to understand their relationship with other genera of grasses.

Morphotaxonomical studies on endemic genera are necessary to understand their interrelationship, speciation and evolution. An attempt has been made to study morphology, cytology, leaf anatomy and seed structure of 7 monotypic genera which

has provided a new set of characters to evaluate their interrelationships with other grass genera.

The work was undertaken with following objectives:

- To survey and collect material of grass genera endemic to Peninsular India..
- To make critical account on their morphology and distribution,
- To study anatomical characters of stem and especially leaf.
- To make chromosome counts for endemic grass genera.
- To study seed structure.

Morphotaxonomical studies on 7 monotypic, endemic grass genera from Northern Western Ghats have been completed in the present investigation.