

Ecology and Conservation of Rare *Leersia Hexandra* Swartz (Poaceae)

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## ABSTRACT

While inventorying the grasses of north-west Uttar Pradesh, I collected an uncommon and rare semi-aquatic grass of the genus *Leersia* from few localities of Western Uttar Pradesh including Saharanpur forest division. I have observed and reported that anthropogenic pressures and habitat loss are the main causes of rarity of this species.

**KEYWORDS :** *Leersia*, Saharanpur, Uttar Pradesh

## 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 family 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 represent 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 1888; 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. 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. 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. A rare species is a group of organisms that are very uncommon or scarce and which may have fragmented habitat. This designation may be applied to either a plant or animal. The IUCN does not normally make designations for rare species. A rare species is that element which occurs very infrequently or exists in small number less than 20,000. Rare species has small stable population of very restricted or wider distribution. These species may not be under threat (Nayar and Sastry, 1987). Several floristic studies and relevant literature (Bor, 1960; Brown, 1979; Duthie, 1883, 1886 & 1888; Hooker 1896; and Clayton et al., 2012) reveal that the genus *Leersia* includes 17 species. Of which 2 species are found in northern India. In North West India, *Leersia hexandra* has been collected earlier (Saharanpur, Uttar Pradesh) in 1851 and the specimen is available in the DD herbarium. While inventorying the grasses of north-west Uttar Pradesh, I collected an uncommon and rare species of the genus *Leersia* Sw. (Poaceae), from some botanically interested pocket near some villages of the district Saharanpur of Uttar Pradesh. It has been identified as *Leersia hexandra* Swartz. It is described here along with images to facilitate its easy identification.

## Description:

Perennials herb; Culms 45-160 cm long, erect or trailing; nodes villous. Sheaths up to 14 cm long, glabrous or coarsely scabrous, margins often ciliate; ligules 1-3 mm long, membranous, truncate; blades 5-23 (27) cm long, 4-16 mm wide, linear-lanceolate, base rounded, apex acuminate, scaberulous, erect, ascending, glabrous or pubescent. Panicles 5-15 cm long, diffused lax at maturity with 1(2) branches per node; branches 4-8 cm long, appressed to ascending, spikelets are more on lower side. Spikelets 4-5 mm long, 0.5-2 mm wide, dimidiate-oblong, scaberulous, compressed, 1-flowered, pale-green in color. Glumes reduced to a rim. Lemma 4-5 x 1.5-2 mm, oblong, coriaceous, 5-nerved, laterally compressed, keeled, scabrid along the nerves, ciliate at margins. Palea 2-3 x 1 mm, linear-oblong, coriaceous, 3-nerved, ciliate along the keels. Stamens 6; anthers 2.5-3.5 mm long, creamy-yellow, filaments hairy 3-4 mm long, whitish-cream in color. Ovary

elliptic; stigmas cream-colored. Caryopsis ca. 2 mm long when fertile (Figure 1).

**Phenology:** October- January but may flower throughout the year.

**Nativity:** Native to [tropical](#) and warm [temperate](#) areas of the [Americas](#) and [Eurasia](#).

**Distribution:** Europe, Africa, Siberia, Asia, Caucasus, Australia, New Zealand, America etc.

**Ecology:** In the study area it is reported from four sites in wet areas, usually along canal and ponds. *Arundo donax*, *Digitaria sanguinalis*, *Hemarthria compressa*, *Eupatorium odoratum*, *Iseilema laxum*, *Panicum paludosum*, *Panicum repens*, *Pouzolzia indica* and *Saccharum spontaneum* are important associates of this species in the study area.

**Status:** Very rare in the study area. IUCN status not known. It has been reported and seen in very few localities in Western Uttar Pradesh including Saharanpur forest division.

**Important Notes:** It is not a weed in the study 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 and fragmentation are the main causes of its rarity. Besides, increased competition with different hydrophytes and decreasing reproductive capacity due to decreased gene pool may be the causes of the rarity of this species in the study area.

**Uses:** It has been observed that cattle feed this grass and grain is said to be eaten by water birds. This species is a hyper accumulator of heavy metals like chromium, copper, and nickel from water and soil and thus it may be used as a good phytoremediator.

## Conclusion 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. Water bodies and Wetland's plants have played fascinating role in the life of mankind since ancient time as food, fodder and medicine. But with the changes in the life style, utility of wetland plants have been ignored by mankind. So they are treated as weeds. 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 this species in the study area. It is considered to be a potential agent of phytoremediation in efforts to clean up metal-contaminated soils. Though the wetlands of Western Uttar Pradesh including Saharanpur have been rich repositories of various aquatic plants species but no inventorization has been made to enumerate the food values and medicinal uses of them. There is an urgent need to document the present status of this species and its conservation and utilization for sustainable development in this floristically rich and unique area.

**Acknowledgement:**

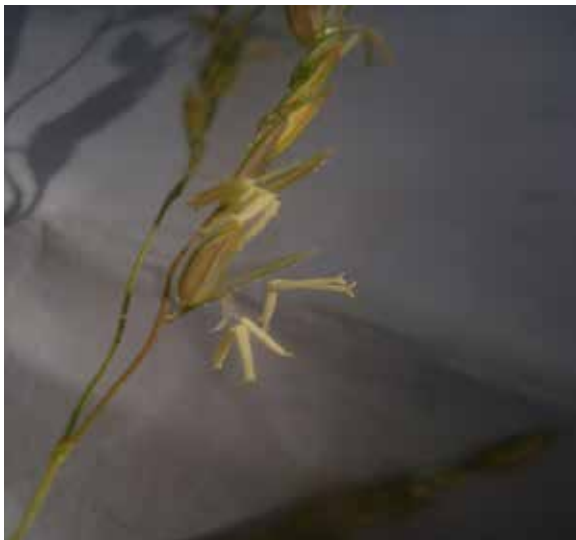
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**A. Leaf with truncate ligule**



**B. Villous node**



**C. Panicle**



**D. Spikelet**



**E. Floret**

**Figure1. *Leersia hexandra* Sw., showing various parts.**

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