

## A study of family Cyperaceae from JP. Nagar (Amroha) district of Uttar Pradesh

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### Abstract

The paper gives an account of sedges of the J. P. Nagar (Amroha) district. A total of 18 species under 7 genera were collected and identified during the year 2016 for the first time. Genus *Cyperus* found dominant having 8 species followed by *Scirpus* (3 species), *Eleocharis* and *Fimbristylis* (2 species) while *Bulbostylis*, *Carex* and *Pycnus* have 1 species each. Species were distributed widely in marshy places, rice fields, pond and in wetlands. The species are used economically as animal food, medicinal; while some as environmental and others are invasive.

**Keywords:** cyperaceae, J.P. nagar, economic importance

### 1. Introduction

J. P. Nagar (Amroha) is north-western district of Uttar Pradesh state in northern India, located North West of Moradabad, near the Sot River. The district came into existence on 24<sup>th</sup> April 1997 in the memory of famous social reformer St. Mahatama Jyotiba Phule by combining 6 blocks namely Gangeshwari, Hasanpur, Amroha, Joya, Gazrola and Dhanora of 3 Tehsils Amroha, Dhanora & Hasanpur vide UP Gazette

no. 1071/1-5-97/224/sa-5 dated 15/4/1997 whose head office is placed in the ancient city Amroha (Fig. 1). The geographical area of district is about 2470 Sq. Km, extending from Latitude 28° 54' North to 30° 6' North and Longitude 78° 28' East to 78° 39' East. The maximum & minimum height from sea level is 240ft. & 177ft. respectively. The maximum and minimum atmospheric temperatures are 43°C and 4°C respectively.

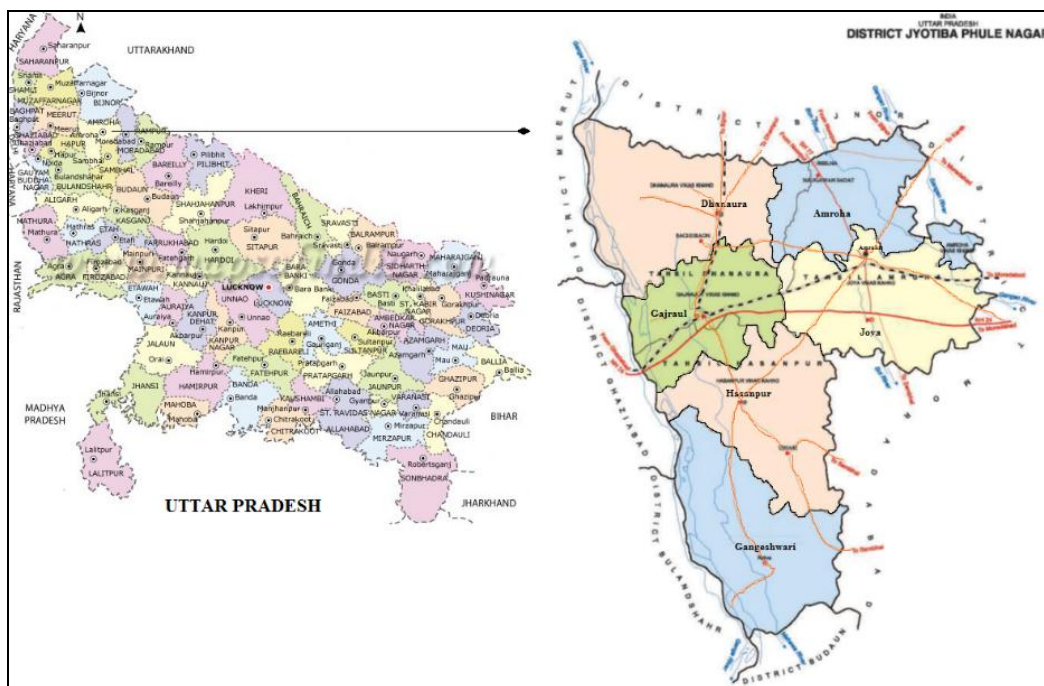


Fig 1: Map of UP and J. P. Nagar district.

The sedge family, or Cyperaceae, is the third largest monocot family, globally it consisting of an estimated 5000 species in 104 genera. They have a cosmopolitan distribution, especially in tropics [8]. The largest genera (approximate numbers of

species) are *Carex*, 2000 spp.; *Cyperus*, 550 spp. (excluding *Kyllinga* and *Pycnus*); *Fimbristylis*, 300 spp.; *Rhynchospora* and *Scleria*, 250 spp. each; *Eleocharis*, 200 spp.; and *Bulbostylis*, *Pycnus* and *Schoenus*, 100 spp. each [7].

The family has considerable economic importance; many members are serious agricultural weeds, whereas others provide animal food, and medicines. Nearly 10% of the family is put to use by humans with the focus of use in the tropics [2, 9]. Cyperaceae also have conservation and environmental importance. They are major or even dominant components of wetland habitats. The decline of sedge species within different types of habitats is a useful indicator of potential habitat damage [21]. In terms of ecosystem services, they can play a particular role in the maintenance and improvement of water quality. Constructed wetlands, artificial marshes or swamps created for anthropogenic discharge such as wastewater, storm-water, run off or sewage treatment in various parts of the world have included Cyperaceae species [15]. Work on family Cyperaceae in different parts of India were carried out by several workers like Haines (1924) [9], Sabnis (1960) [17], Ghosh (1979) [6], Rao and Verma (1981) [16], Uniyal *et al.* (1997) [20], Singh (2007) [18], Chaudhary *et al.* (2012) [4], Kumar and Saxena (2012) [12], Beena kumari and Habib (2012) [3], Mishra and Chauhan (2013) [15], Kumar *et al.* (2013) [13] and Singh (2014) [19].

## 2. Material and Method

Collection of plant from J. P. Nagar (Amroha) district has been done using aesthetic sense and scientific mind. The field trips for collection of Sedges from study area was made during 2016. Critical morphological studies have been made and different floras and monographs have been consulted to identify the sedge species [1, 5, 10, 14, 16, 18, 20]. Online database like The International Plant Names Index ([www.ipni.org](http://www.ipni.org)) and The Plant Lists ([www.theplantlists.org](http://www.theplantlists.org)) were referred for correct nomenclature and author citations. The plants were processed into voucher specimen following standard methods [11]. After the work is over voucher specimens were deposited in Department of Botany, Hindu College, Moradabad (U.P.) for future use.

## 3. Result and Discussion

The present study revealed 7 genera and 18 species of sedges growing in J. P. Nagar district which are presented in the form of genera and species key. Again, they have been arranged in alphabetical order in Table-1 with their phenology, status, locality and economic importance. Genus *Cyperus* found dominant having 8 species followed by *Scirpus* (3 species), *Eleocharis* and *Fimbristylis* (2 species) while *Bulbostylis*, *Carex* and *Pycneus* have 1 species each. Species were distributed widely in river banks, muddy soil, marshy places, grass fields, rice fields, pond side, moist waste soil and damp soil. The species are used economically as animal food, medicinal; while some as environmental and some are invasive.

### 3.1 Cyperaceae genera key

1a. Flower unisexual, nut enclosed to utricle ..... *Carex*

- 1b. Flower bisexual, nut not enclosed to utricle:  
 2a. Glume fertile distichously arranged:  
 3a. Stigma 3 rarely 2, nutlets trigonous, glumes not winged ..... *Cyperus*  
 3b. Stigma 2, nutlets two sided ..... *Pycneus*  
 2b. Fertile Glumes spirally arranged:  
 4a. Style base constricted or articulated above nut:  
 5a. Leaves absent, bristle present ..... *Eleocharis*  
 5b. Leaves present:  
 6a. Style flat hairy, usually persistent ..... *Fimbristylis*  
 6b. Style linear, glabrous and usually deciduous ..... *Bulbostylis*  
 4b. Style base neither constricted nor articulated, bristle uniform scale like ..... *Scirpus*

### 3.2 Key to genus Cyperus

- 1a. Glumes few, rachilla of spikelet deciduous ..... *C. compactus*  
 1b. Glumes many, rachilla of spikelet persistent:  
 2a. Stigma 3, nut trigonous:  
 3a. Spikelet not in spikes, digitate or clustered:  
 4a. Perennial with woody rhizome, spikelet white ..... *C. niveus*  
 4b. Annual with fibrous roots, spikelet not white ..... *C. difformis*  
 3b. Spikelet in spike or spike like raceme:  
 5a. Annual:  
 6a. Glumes obtuse, shortly mucronate ..... *C. iria*  
 6b. Glumes aristate or cuspidate ..... *C. compressus*  
 5b. Perennial ..... *C. rotundus*  
 2b. Stigma 2, nut compressed:  
 7a. Spikelet arranged in spike ..... *C. alopecuroides*  
 7b. Spikelet arranged in head ..... *C. pygmaeus*

### 3.3 Key to genus Eleocharis

- 1a. Stem transversely septate, spikelet ovoid or conical, up to 4 mm long ..... *E. atropurpurea*  
 1b. Stem not transversely septate, spikelet solitary terminal, up to 1-2.5 cm long ..... *E. palustris*

### 3.4 Key to genus Fimbristylis:

- 1a. Stamen 1, nut 0.5 mm to 0.8 mm long ..... *F. bis-umbellata*  
 1b. Stamens 1-3, nut 1.0 mm to 1.5 mm long ..... *F. dichotoma*

### 3.5 Key to genus Scirpus:

- 1a. Spikelets 1-many, sessile, combined in simple clusters, bristle absent:  
 2a. Flowers placed laterally on stem ..... *S. articulatus*  
 2b. Flowers found in terminal clusters ..... *S. affinis*  
 1b. Spikelets numerous, combined in umbellate cyme, bristle present ..... *S. tuberosus*

**Table 1:** List of Sedge Flora of J. P. Nagar District

S. No.	Plant Name	Fl. & Fr.	Locality	Status	Economic Importance
1.	<i>Bulbostylis barbata</i> (Rottb.) C. B. Clarke	Sept – Oct	DS	Co	AF, Med
2.	<i>Carex fedia</i> Nees.	Feb – May	RL	VCo	---
3.	<i>Cyperus alopecuroides</i> Rottb.	Aug – Oct	RB	Co	---
4.	<i>C. compactus</i> Retz.	July – Nov	PS	Fa Ab	Med
5.	<i>C. compressus</i> L.	July – Nov	RS	Ab	AF, Med
6.	<i>C. difformis</i> L.	Aug – Nov	MWS	Co	Inv
7.	<i>C. iria</i> L.	Aug – Oct	MP	Ab	AF, Med, Inv, Mat
8.	<i>C. niveus</i> Retz.	July – Oct	MWS	Fr Ab	---
9.	<i>C. pygmaeus</i> Rottb.	Oct – July	RF	Ab	---
10.	<i>C. rotundus</i> L.	July – Oct	GF	Ab	AF, Med, EU
11.	<i>Eleocharis atropurpurea</i> (Retz.) Kunth	Aug – Nov	MP	Co	---
12.	<i>E. palustris</i> (L.) R. Br.	Aug – Oct	MP	Ab	---
13.	<i>Fimbristylis bisumbellata</i> (Forssk.) Bubani	Oct – Apr	MWS	Co	---
14.	<i>F. dichotoma</i> (L.) Vahl.	May – Oct	RB	Oc	AF, Med, EU
15.	<i>Pycneus pumilus</i> (L.) Nees	Oct – July	RB	Ab	---
16.	<i>Scirpus affinis</i> Roth.	Feb – May	MS	Co	Inv
17.	<i>Scirpus articulatus</i> L.	Sept – Dec	MS	Co	---
18.	<i>Scirpus tuberosus</i> Desf.	Feb – May	RB	Co	---

**Locality:** Damp soil = DS; Grassy field = GF; Marshy places = MP; Moist waste soil = MWS; Muddy soil = MS; Pond side = PS; Railway line = RL; Rice field = RF; River Bank = RB; Road side = RS

**Status:** Abundant = Ab; Common = Co; Fairly abundant = Fa Ab; Frequently abundant = Fr Ab; Occasional = Oc; Very common = VCo

**Economic Importance:** Animal Food = AF; Environmental Use = EU; Invasive = Inv; Medicinal = Med

#### 4. Acknowledgement

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