

***ELEUSINE INDICA* (POACEAE): A NEW ALIEN SPECIES IN THE FLORA OF TAJIKISTAN**

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During field studies in Tajikistan in 2008, we recorded specimens of *Eleusine indica* (L.) Gaertn., a species new to the flora of the country (Ovchinikov 1957; Rasulova 1991). Further research in 2009 and 2010 confirmed its occurrence there, and we recorded more localities of it in different regions of Tajikistan.

Eleusine indica (L.) Gaertn. (syn. *Cynosurus indicus* L., *Eleusine distans* Moench, *E. gracilis* Salisb.) is a cespitose annual grass, up to 90 cm high, branching at the base, with silver-white lower parts of culms composing a pale wheel in the center of the plant. Culms flattened laterally, smooth or with a few hairs, 15–90 cm long, blades 5–23 cm long, 2.5–7.0 cm wide. Inflorescence composed of (1)–2–10(–17) spikelets. Glumes sharp, lower glume 1-veined, rarely with an additional dorsal vein 1.1–2.3 mm long, upper glume mainly 5–7-veined, 1.8–2.9 mm long (Philips 1972).

In Tajikistan, *Eleusine indica* grows in ruderal plant communities (order *Eragrostietalia* J. Tx. 1961, class *Stellarietea mediae* R. Tx., Lohm. & Prsg. 1950), on wasteland, road verges and intensively trampled sites such as pavements, paths or promenades. The species probably was introduced to Tajikistan with agricultural compost. In some places, *E. indica* was also observed on city lawns and flower beds accompanied by ornamental plantings. The species spread from there to other easily accessible anthropogenic habitats. Phytosociological relevés of the structure and composition of phytocoenoses with *E. indica* are presented in Table 1. Names of plant species follow Czerepanov

(1995). Vegetation patches were documented using the approach of Braun-Blanquet (1964). The numbers of relevés in the table correspond to the numbers in the list of localities given below. The specimens collected are deposited in KRA.

LIST OF LOCALITIES IN TAJIKISTAN: Dushanbe, alt. ca 950 m: 1 – Aini St., roadside, in gaps between flagstones and on the lawn edge, a trampled and somewhat wet place; 2 – Karin Mann St., roadside and along trampled pathways; 3 – Nazarshoev St., city lawn alongside pavement close to the railway track; 4 – Korgar St., on the border between asphalt and kerb and near the gutter; 5 – Kaharov St., roadside; 6 – Rudaki St., in gaps between flagstones; 7 – Esenin St., old railway station, trampled pathways; 8 – Bukhoro St., in gaps between flagstones; 9 – Fuchlik St./Kaharov St., in gaps between flagstones; 10 – Fuchlik St. (middle part), along trampled pathways; 11 – Korgar St., in gaps between flagstones; 12 – Aini

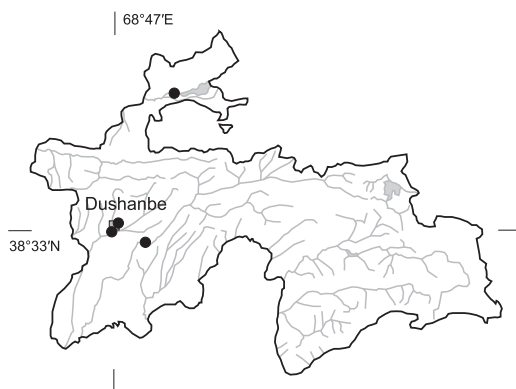


Fig. 1. Distribution map of *Eleusine indica* (L.) Gaertn. in Tajikistan.

Table 1. Species composition of patches with *Eleusine indica* (L.) Gaertn.

No. of locality and relevé	1	2	3	4	5	6	7	Constancy
Date (day, month, 2009)	12.07	12.07	12.07	12.07	12.07	13.07	12.07	
Area of releve (m ²)	2	2	3	1	1	2	2	
Cover of C layer (%)	60	95	60	40	50	20	35	
Number of species	11	8	10	9	9	5	16	
<i>Eleusine indica</i>	3	2	2	2	2	2	1	V
<i>Polygonum aviculare</i> s.l.	2	4	4	+	2	1	2	V
<i>Amaranthus retroflexus</i>	+	+	+	+	.	.	.	III
<i>Artemisia annua</i>	+	+	+	+	.	.	.	III
<i>Capsella bursa-pastoris</i>	.	.	+	.	+	+	.	III
<i>Cynodon dactylon</i>	.	.	.	2	1	1	.	III
<i>Echinochloa crus-galli</i>	.	.	+	+	+	.	.	III
<i>Eragrostis minor</i>	+	.	.	.	.	1	2	III
<i>Hordeum leporinum</i>	.	2	2	.	.	.	1	III
<i>Portulaca oleracea</i>	.	.	.	1	1	.	+	III
<i>Setaria viridis</i>	+	.	1	.	1	.	.	III
<i>Amaranthus lividus</i>	+	.	.	.	+	.	.	II
<i>Plantago lanceolata</i>	.	+	.	.	.	.	+	II
<i>Solanum nigrum</i>	1	.	.	.	+	.	.	II
<i>Amaranthus albus</i>	.	.	.	.	.	.	+	II
<i>Amaranthus blitum</i>	+	.	.	.	.	.	.	I
<i>Bromus scoparius</i>	.	.	.	.	.	.	+	I
<i>Chenopodium botrys</i>	.	.	.	.	.	.	1	I
<i>Herniaria hirsuta</i>	.	.	.	.	.	.	+	I
<i>Kickxia elatine</i>	.	.	.	.	.	.	+	I
<i>Lolium perenne</i>	2	.	.	.	.	.	.	I
<i>Paspalum digitaria</i>	.	.	.	+	.	.	.	I
<i>Poa bulbosa</i>	.	.	.	.	.	.	+	I
<i>Sonchus asper</i>	.	+	.	.	.	.	.	I
<i>Verbena officinalis</i>	+	.	.	.	.	.	.	I
<i>Vulpia myuros</i>	.	.	.	.	.	.	+	I
Asteraceae sp.	.	.	.	.	.	.	+	I
Planta sp.	.	+	+	+	.	.	1	III
<i>Poa</i> sp.	.	.	.	.	.	.	+	I
<i>Vicia</i> sp.	.	.	+	.	.	.	.	I

St. (part W), in gaps between flagstones; 13 – Aini St. (middle part), in flower beds with ornamental plants; 14 – Afzali St., in gaps between flagstones; 15 – Navruz St., road verges close to the railway track; 16 – Esenin St., roadside; 17 – Rudaki St. (Central Park), city lawn; 18 – Karaboev St., along roadsides.

Nurek, alt. ca 940 m, central part of town, in gaps between flagstones.

Khodzhent, alt. 525 m, Rudaki St., central part of the town, in gaps between flagstones.

According to different sources, *Eleusine indica* probably is originally native to Africa. It is considered a Pantropical weed (Salimanth *et al.* 1995), with a Mediterranean-Eurasian-Tropical type of

range (Oberdorfer 1994). It is also considered a strongly expansive plant and often a troublesome weed, drought-tolerant and herbicide-resistant. In the tropics and subtropics it is a weed of crop plants very hard to subdue (Ivens 1989). In Middle Asia the species has so far been known from large cities such as Tashkent (Uzbekistan) and Ashkhabad (Turkmenistan) (Bondarenko 1968; Tzvelev 1976; Nikitin & Geldikhanov 1988).

In the flora of Tajikistan, *E. indica* should be treated as an alien species, currently established in ruderal habitats (neophyte *sensu* Meusel 1943 *vel* kenophyte: epiphyte *sensu* Kornaś 1981, 1990). The species shows a significant capability

for adaptation and colonization in anthropogenic habitats and should be regarded as an expansive plant. *Eleusine indica* probably is a more common species in the relatively poorly recognized ruderal flora of Tajikistan.

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