

CHENOPODIUM BADACHSCHANICUM (AMARANTHACEAE), A NEW RECORD FOR IRAN

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Abstract. *Chenopodium badachschanicum* Tzvelev is recorded for the first time for the flora of Iran. The species has been collected from Hamoon lake basin in South East of Iran. Characteristics, exact localities, habitat and geographical distribution are explained.

Key words: Amaranthaceae, *Chenopodium badachschanicum*, new record, Iran

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Introduction

Chenopodium L. comprises about 150 annuals and perennials in the world (FUENTES-BAZAN *et al.* 2012), out of which at least 15 species occur in Iran (UOTILA 1997; ASSADI 2001).

Due to phenotypic plasticity, polyploidy and hybridization, taxonomy of *Chenopodium* always was a problematic task (COLE 1961; RAHIMINEJAD & GORNALL 2004; KURASHIGE & AGRAWAL 2005; ZHOU *et al.* 2005). Among this genus, two controversial taxa, *i.e.* *C. album* L. aggregate and *C. hybridum* L. aggregate, comprise different species, subspecies, varieties and forms (JÜTTERSONKE & ARLT 1989; DVOŘÁK 1990, 1992; ZHU *et al.* 2003).

C. hybridum agg. is described in Flora of China as two species or subspecies (ZHU *et al.* 2003). Although *C. badachschanicum* Tzvelev was reported for Central Asia by TZVELEV

(1960), in Eastern Asia it was not known before this time (ZHU *et al.* 2003).

Several new species of genus *Chenopodium* have been recorded in recent years from Iran (RAHIMINEJAD *et al.* 2004; RAHIMINEJAD & GHAEMMAGHAMI 2005), confirming that this genus here is represented by more species than it was suggested before (UOTILA 1997). During field investigation in Sistan and Baluchestan provinces at Hamoon Lake district (south east of Iran), an interesting *Chenopodium* specimen was collected. Identification of the specimen was done in the herbarium of Alzahra University (ALUH), and as a result *C. badachschanicum* is reported for the first time for the flora of Iran.

Results

Chenopodium badachschanicum
Tzvelev, Notul. Syst. Herb. Inst. Bot. Nomine
V.L. Komarovii Acad. Scient. URSS 20: 434,



Fig. 1. Map showing locations of *Chenopodium badachschanicum* in Iran (★) and adjacent countries (●).

1960; Ovtšinnikov, Fl. Tadž. SSR 3: 328, 1968; Pratov in Bondarenko & Nabiev, Consp. Fl. As. Med. 3: 42, 1972; Uotila in Rech. f., Fl. Iran. 172: 40, 1997.

Description. Sparsely farinose to subglabrous annual, stem to 30 cm, yellowish-green, erect, angular, branched, lower branches sub-opposite. Petiole usually *c.* 1/3 of the length of leaf blade, blade thin, 3-8(-15) cm, lanceolate, with outward-projecting acute basal lobes and 0-2 lobe-like acute teeth on both sides, otherwise entire, apex acute to acuminate, base sub-truncate to slightly cordate, bracts narrowly triangular, hastate, entire, uppermost lanceolate. Inflorescence narrow, lax, mostly leafless, terminal and axillary, cymose-dichasial, branches divaricate, solitary or several loosely together. Perianth segments 5, connate to

below the middle, partly spreading in fruit, with a strong midrib visible especially inside, back apically keeled. Stamens 5. Stigmas 2-3. Part of fruits falling with perianth. Pericarp persisting. Seeds horizontal, black, (1.2-)1.4-1.6(-2.0) mm in diameter, round in outline, margin somewhat acute, testa with large, irregular but mostly radially elongated pits, radial furrows and other rugosities, sometimes almost smooth (Figs 1-3).

Flowering and fruiting. June – September.

Studied population. IRAN: Sistan & Baluchestan, 7 km south of Hirmand, Barahoi village (ALH-ha105).

General distribution. C Asia, NE Afghanistan, N Pakistan, N India, China, Nepal.

Notes. *C. badachschanicum* is an element of the *C. hybridum* aggregate. This is a tiny annual species. Type specimen was not available; there



Fig.2. General view of collected *Chenopodium badachschanicum*.

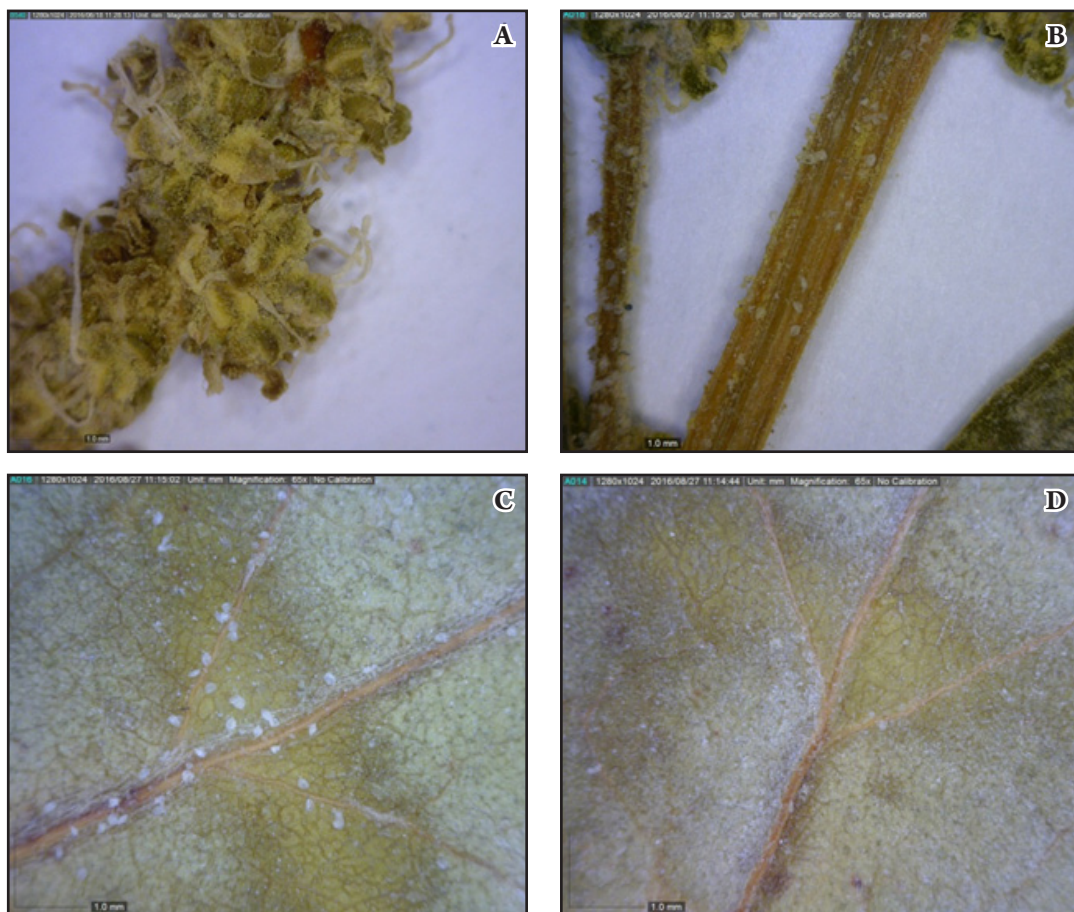


Fig.3. Different parts of collected *Chenopodium badachschanicum*: **A** – flowers; **B** – stem; **C** – abaxial surface of the leaf; **D** – adaxial surface of the leaf.

was only description of the species from the Flora of Pakistan (PERVEEN & QAISER 2012). Details of its description were compared with available references (FREITAG *et al.* 2001). According to the descriptions given in Flora of Pakistan, the specimen was identified as *C. badachschanicum*. To be sure about the species identification, micro-morphology of the pollen grains was studied (Fig. 4).

This species is sympatric with *C. murale* L. which shows great morphological variability in different localities of Iran, so their pollen grains were compared. In particular, exine thickness in studied *C. badachschanicum* (2.52 μm) was in concordant with PERVEEN & QAISER (2012) measurements for Pakistan.

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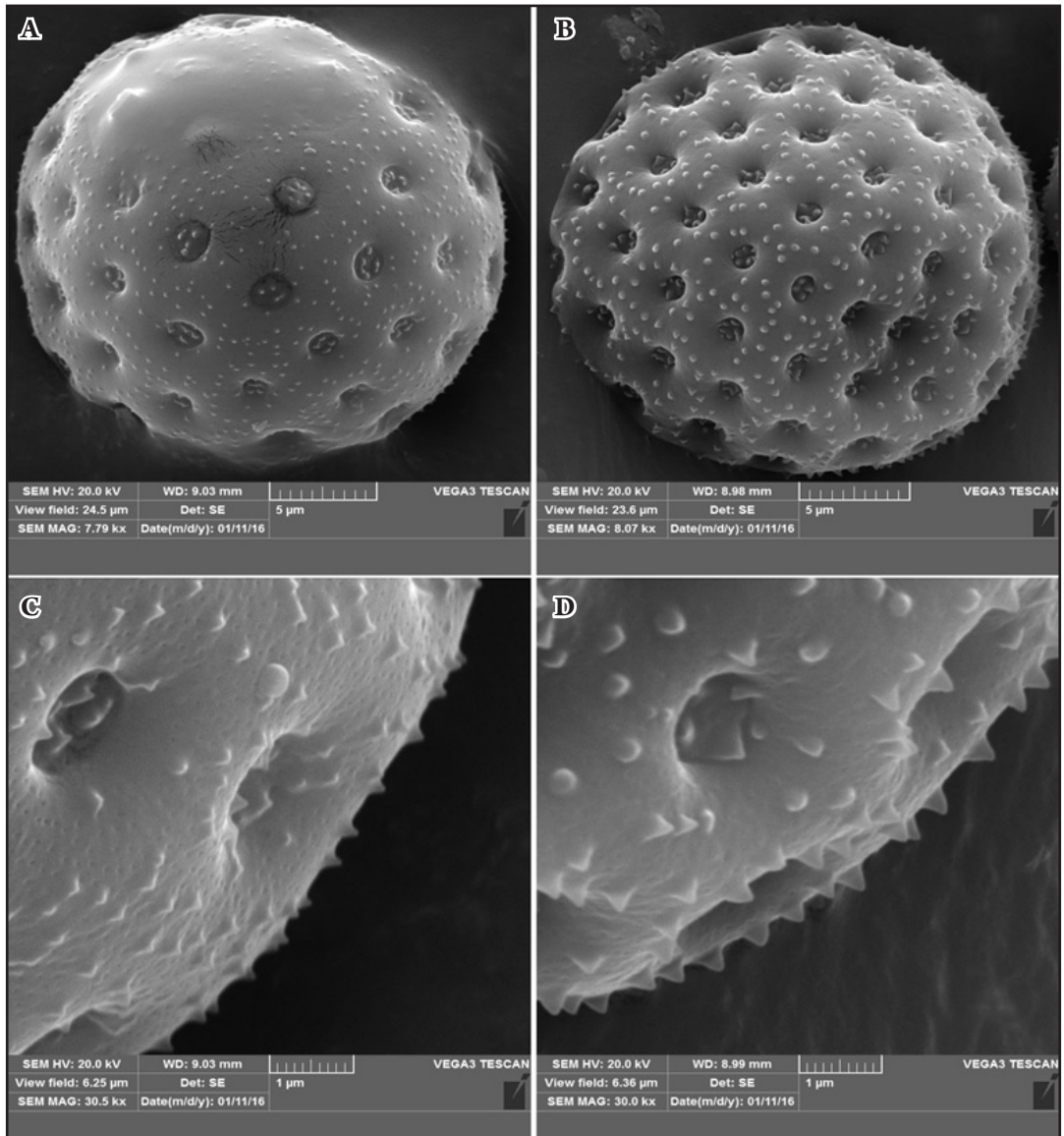


Fig. 4. Pollen grains of *Chenopodium murale* (A, C) and *C. badachschanicum* (B, D).

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