



**TEUCRIUM PRUINOSUM VAR. AKSARAYENSE VAR. NOV.
(LAMIACEAE) FROM CENTRAL ANATOLIA, TURKEY**

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Abstract. *Teucrium pruinosum* var. *aksarayense* M. Dinç & S. Doğu (Lamiaceae), a new variety from Aksaray in Central Anatolia, is described and illustrated. The new variety is similar to the typical one in its calyx teeth uncinatate at tip and subequal to the tube with conspicuous midvein. It is readily distinguished from var. *pruinosum* by its general appearance, indumentum, and floral organ pigmentation. The map showing the distributions of the varieties was given.

Key words: *Teucrium*, Lamiaceae, taxonomy, Turkey

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Introduction

The genus *Teucrium* L. is a large and polymorphic genus comprising about 200 species in the world. It has cosmopolitan distribution, mainly in Europe, North Africa and in the temperate parts of Asia (KÄSTNER 1989; ABU-ASSAB & CANTINO 1993). It has been divided into ten sections, identifiable through the calyx shape and the inflorescence structure (MCCLINTOCK & EPLING 1946; TUTIN & WOOD 1972). These sections are *Teucropsis* Benth., *Teucrium* Benth., *Chamaedrys* (Mill.) Schreb., *Polium* (Mill.) Schreb., *Isotriodon* Boiss., *Pycnobotrys* Benth., *Scorodonia* (Hill) Schreb., *Stachyobotrys* Benth., *Scordium* (Mill.) Benth., and *Spinularia* Boiss.

In Turkey, the genus *Teucrium* comprises now a total of 35 species, including the recently added *T. chasmophyticum* Rech. f. (DÖNMEZ 2006), *T. melissoides* Boiss. & Hausskn. ex Boiss. (DÖNMEZ *et al.* 2010), *T. aladagense* Vural & H. Duman (VURAL *et al.* 2015) and *T. sirnakense* Özcan & Dirmenci (ÖZCAN *et al.* 2015), recently reinstated *T. andrusi* Post (DİNÇ *et al.* 2011), and the long overlooked *T. krymense* Juz., recorded from Kars (ÖZHATAY & KÜLTÜR 2006). According to the infraspecific classification, Turkish flora presently includes 48 taxa (DÖNMEZ 2006; ÖZHATAY & KÜLTÜR 2006; PAROLLY & EREN 2007; DÖNMEZ *et al.*

2010; DİNÇ *et al.* 2011; VURAL *et al.* 2015; ÖZCAN *et al.* 2015).

Teucrium sect. *Teucrium* has 30 species world-wide (NAVARRO & EL OUALIDİ 2000; PAROLLY & EREN 2007), 11 of them occur in Turkey (EKİM 1982; DUMAN 2000). According to the intraspecific classification, these species includes 13 taxa. In the section, *T. orientale*, the closest relative of *T. pruinosum*, divided into 3 varieties in terms of indumentum type and density.

Some *Teucrium* specimens were collected from Aksaray province of Central Anatolia by the authors. They were identified according to the Flora of Turkey as *T. pruinosum*. *T. pruinosum* is mainly characterised by its grey pruinose appearance due to densely canescent indumentum, calyx teeth uncinatate at tip and subequal to the tube with conspicuous midvein. Our specimens show the characteristics related with the calyx shape. But, they are readily distinguished from the typical *T. pruinosum* by their subglabrous indumentum (not densely canescent), green appearance of the leaves and stems (not grey pruinose), blue-violet corollas (not light blue), purple pedicels (not grey or bluish), and filaments (not bluish). After the studies on *T. pruinosum* populations in Central Anatolia, the observations on the syntypes and some other herbarium specimens, and the examinations on the related Floras

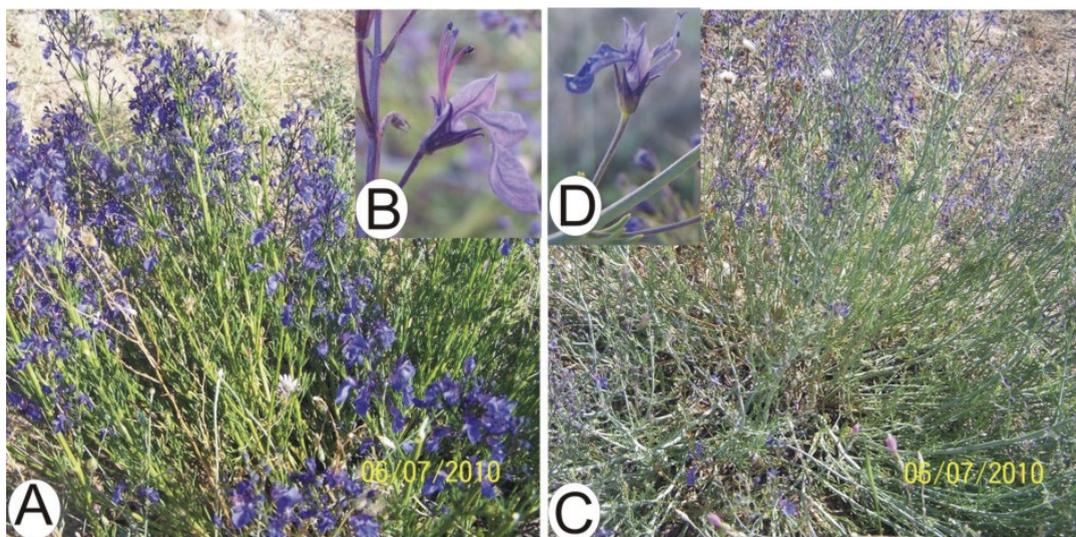


Fig. 1. The general appearances and enlarged flowers of the two varieties of *Teucrium pruinosum*: **A, B** – var. *aksarayense*; **C, D** – var. *pruinosum*.

(RECHINGER 1964; MOUTERDE 1966; FEINBRUN DOTHAN 1978; EKIM 1982), we concluded that our specimens represent an undescribed variety included in the species.

Material and methods

Plant materials were collected from the natural populations of *T. pruinosum* growing in the central part of Turkey. Collection data is as follows: (as var. *pruinosum* here) Turkey, C4 Konya, In aridis subsalsis planitie prope Karaman Lycaoniae ad radices Karadagh, 15.06.1845, *Heldreich* (syntype, E photo); B5 Kayseri ad Caesaream Cappadociaae, 1107 m, 01.06.1856, *Balansa* 1069 (syntype, E photo); B5 Kayseri: Yeşilhisar, Güzelöz Köyü civarı, kayalık, step, 1400 m, 06.07.2010, *M. Dinç* 3303 & *S. Doğu*; Develi civarı, steppe, 1200 m, 06.07.2010, *M. Dinç* 3304 & *S. Doğu*; B5 Aksaray: Hasan Dağı etekleri, Karkın köyü civarı, steppe, 1350 m, 17.07.2010, *M. Dinç* 3332 & *S. Doğu*; Demirci Köyü civarı, yol kenarı, 1200 m, 06.07.2010, *M. Dinç* 3298 & *S. Doğu*; Aksaray-Niğde sınırı, Kayırlı Kasabası civarı, steppe, 1400 m, *M. Dinç* 3300 & *S. Doğu*; B5 Nevşehir: Avanos civarı, 1150 m, steppe, 10.07.2010, *M. Dinç* 3331 & *S. Doğu*; (as var. *aksarayense* here) B5 Aksaray:

Aksaray-Niğde sınırı, Kayırlı Kasabası civarı, steppe, 1400 m, *M. Dinç* 3299 & *S. Doğu*; B5 Nevşehir: Avanos civarı, 1150 m, steppe, 10.07.2010, *M. Dinç* 3330 & *S. Doğu*, B5 Kayseri: Yeşilhisar, Güzelöz Köyü civarı, kayalık, steppe, 1400 m, 06.07.2010, *M. Dinç* 3302 & *S. Doğu*.

The plants collected by the authors were identified using “Flora of Turkey and the east Aegean Islands” (EKIM 1982) and stored in Necmettin Erbakan University, Ahmet Keleşoğlu Faculty of Education, Department of Biology, Konya. However, with the observations on the syntypes and some other herbarium specimens of *T. pruinosum*, and the examinations on the related Floras (RECHINGER 1964; MOUTERDE 1966; FEINBRUN DOTHAN 1978), morphological studies on the populations and herbarium specimens showed that some individuals were clearly and persistently differ from typical characteristics of *T. pruinosum*.

In order to show the differences between the typical and new variety, photo and microphotographs were taken. In order to take microphotographs, the pieces of the stems and leaves of each variety were mounted directly on stubs with double-side adhesive tape and coated with gold. The pieces were examined by SEM and photographed.

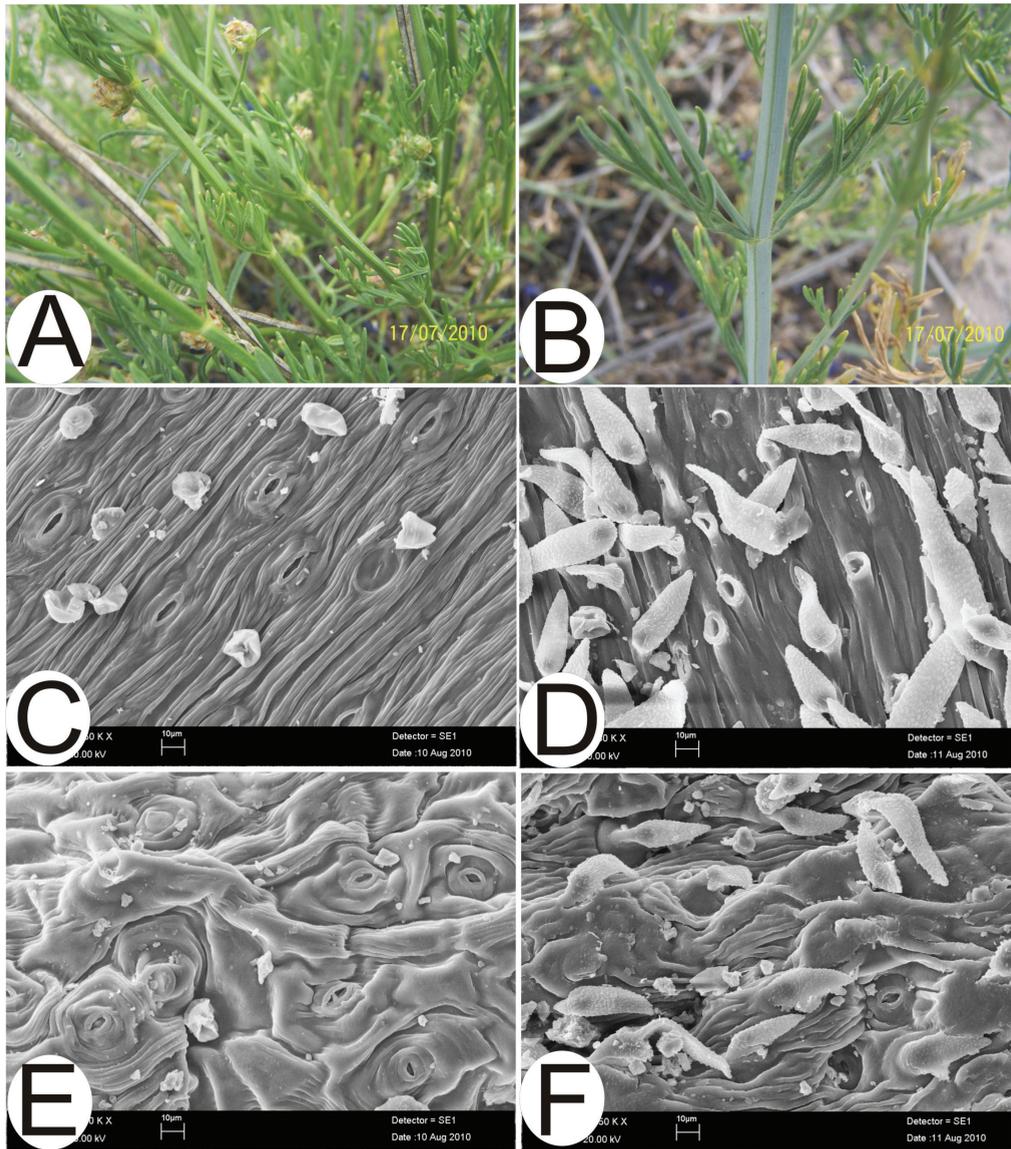


Fig. 2. The views of stems and leaves of the two varieties of *Teucrium pruinosum*: **A, C, E** – var. *aksarayense*; **B, D, F** – var. *ruinosum*. **A, B** – the photographs of stems and leaves; **C, D** – SEM photos of the stems; **E, F** – SEM photos of the leaves.

Results

Teucrium pruinosum var. *aksarayense* M. Dinç & S. Doğu var. *nov.* (Figs 1-3).

Type: B5 Aksaray: Hasan Dağı etekleri, Karkın köyü civarı, steppe, 1350 m, 17.07.2010, M. Dinç 3333 & S. Doğu (*Holotype*: KNYA, *Isotypes*: GAZI, HUB, Yıldırımli Herb.)

Diagnosis: var. *pruinosum* similis sed plantis subglabris (non dense canus), caulis et foliis

viridis (non canus-pruinosus), flos cyaneo-violaceus (non pallidus cyaneus), pedicelli et filamanta purpurei (non canus vel pallidus cyaneus) differt.

Description: Perennial herbs, 30-65 cm, green, subglabrous with very sparse simple, short non-glandular and subsessile clavate-glandular hairs, many-stemmed from an indurate base and a woody root stock. Stems erect or slightly ascending, strongly tetragonal,

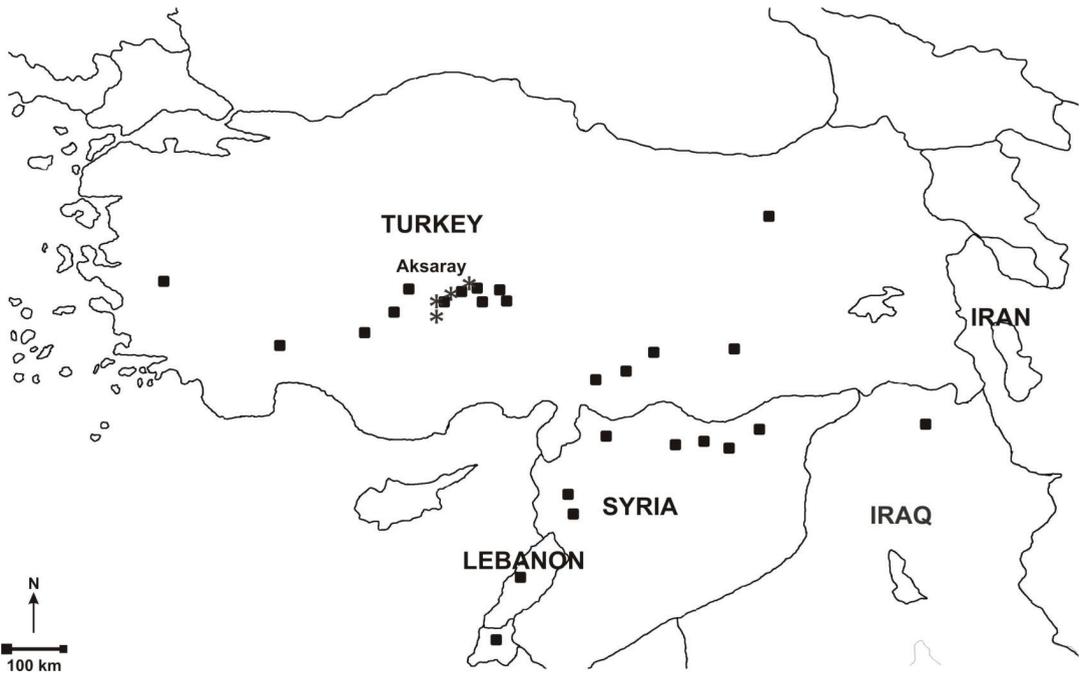


Fig. 3. Distribution map of the two varieties of *Teucrium pruinosum*: var. *pruinosum* (■), and var. *aksarayense* (*).

rigid, each ending above in a thyrsoid narrow panicle with erect spreading branches. Leaves ovate-lanceolate in outline, ternately 2-3-pinnatisect into green linear rigid lobes with revolute margins, subglabrous with very sparse hairs. Verticillasters 2-flowered; pedicels 1-flowered, purplish, longer than both calyx and floral leaves. Calyx subglabrous, purplish, 4.5-6.0 mm, campanulate; teeth lanceolate, 1.0-1.5 × calyx tube, prominently 1 veined, uncinuate at tip. Corolla blue-violet, 8-12 mm, usually 2-3 × calyx; upper lip elongate, with acute lateral lobes. Stamens long-exserted, filaments purple. Nutlets ovoid, 2.1-3.0 × 0.9 × 1.3 mm, with glandular and nonglandular hairs.

Recommended IUCN threat category:

T. pruinosum var. *aksarayense* has been presently known from four localities in Aksaray and its adjacent provinces. Its estimated area of occupancy is less than 5000 km² (criterion B). The populations are healthy, but with less than 2500 individuals (criterion C). In addition, the restricted area of the populations implies a high risk of extinction owing to nearness of roads and agricultural areas, subjection to grazing (criterion D). Therefore, *T. pruinosum* var.

aksarayense should be classified as “Endangered (EN)” based on the criteria of the IUCN Red List Categories (IUCN 2001).

Etymology: The name of the new variety refers to the province in which the variety is collected firstly.

THE IDENTIFICATION KEY OF THE TWO VARIETES OF *T. PRUINOSUM*

- 1. Plant canescent with densely simple short non-glandular hairs, grey pruinose, corolla light blue, pedicels grey or bluish, filaments bluish var. *pruinosum*
- 1*. Plant subglabrous with very sparse simple short non-glandular hairs, green, corolla blue-violet, pedicels and filaments purple var. *aksarayense*

Discussion

Although the new variety is sympatric for all part of its range with the typical variety, it keeps the diagnostic characters from var. *pruinosum*. The morphological differences between the two varieties are never subtle

and no intermediate forms exist. Taking into consideration these data, it reveals that the new variety is emerged from Aksaray and its surrounding populations of *T. pruinosum* by sympatric speciation.

According to the SEM observations, in accordance with general appearances of the two varieties, var. *pruinosum* has abundant short non-glandular and very sparse sessile glandular trichomes, while var. *aksarayense* has very sparse short non-glandular and denser sessile glandular ones (Fig. 2).

While var. *pruinosum* has mainly grey pruinose appearance owing to densely canescent indumentum and grows in Syria, Lebanon, Palestine, Iraq, and Turkey (RECHINGER 1964; MOUTERDE 1966; FEINBRUN DOTHAN 1978; EKIM 1982), the new variety has green appearance due to subglabrous indumentum and only occurs in Central Anatolia (Fig. 3). The situation support the opinion that Anatolia is a major speciation centre for *Teucrium* sect. *Teucrium* (PAROLLY *et al.* 2007).

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