

A new species of *Stipa* sect. *Leiostipa* (Poaceae) from SW Spain

Authors: Vázquez, Francisco M., Pérez-Chiscano, José Luis, Gutierrez, María, and Ramos, Soledad

Source: *Willdenowia*, 39(2) : 261-264

Published By: Botanic Garden and Botanical Museum Berlin (BGBM)

URL: <https://doi.org/10.3372/wi.39.39204>

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

FRANCISCO M. VÁZQUEZ^{1*}, JOSÉ LUIS PÉREZ-CHISCANO², MARÍA GUTIERREZ¹ & SOLEDAD RAMOS³

A new species of *Stipa* sect. *Leiostipa* (*Poaceae*) from SW Spain

Abstract

Vázquez F. M., Pérez-Chiscano J. L., Gutierrez M. & Ramos S.: A new species of *Stipa* sect. *Leiostipa* (*Poaceae*) from SW Spain. – Willdenowia 39: 261–264. – Online ISSN 1868-6397; © 2009 BGBM Berlin-Dahlem. doi:10.3372/wi.39.39204 (available via <http://dx.doi.org/>)

Stipa serena, a new species of *S.* sect. *Leiostipa* belonging to the *S. clausa* group, is described from the provinces of Badajoz and Ciudad Real in southwestern Spain. Its morphological and anatomical characteristics are compared with those of other members of the *S. clausa* group.

Additional key words: *Gramineae*, *Stipa clausa*, morphology, anatomy, taxonomy

Introduction

Stipa sect. *Leiostipa* Dumort. is strongly represented in the western Mediterranean area (Trabut 1889; Maire 1953; Moraldo 1986; Scholz 1991, 1996, 1998; Vázquez & Devesa 1997, 2002; Vázquez & Ramos 2007) and almost half the species of *Stipa* L. in the southern Iberian Peninsula belong to this section (Amaral Franco & Rocha Alfonso 1998; Talavera 1987; Vázquez & al. 1996a-b, 1999). Among its representatives are a good number of narrowly distributed species that are restricted to specific habitats in arid regions. This is also true of taxa in the NW African-Iberian *S. clausa* group, *S. clausa* var. *matritensis* F. M. Vázquez & Devesa (1996b) and *S. cazorlensis* (F. M. Vázquez & Devesa) F. M. Vázquez, H. Scholz & Sonnentag (Vázquez & al. 1999).

In the course of our study of the floristic diversity of Extremadura, we discovered unusual plants of the *Stipa clausa* group. We compared them with respect to the relevant morphological and anatomical features with the known taxa of the *S. clausa* group, using herbarium material of members of the group from the southern Iberian

Peninsula and Morocco preserved at BC, GDA, GDAC, HSS, MA, SEV and UNEX (herbarium abbreviations following Thiers 2008+).

The morphological and anatomical comparison revealed that the plants discovered differ sufficiently from the two known species of the *Stipa clausa* group to merit recognition as a separate species. This species is described in the present paper as new to science and delimited from the other two species of the group.

Stipa serena F. M. Vázquez & Pérez-Chiscano, **sp. nov.**
Holotype: Spain, Extremadura, Badajoz, Quintana de la Serena, 30STH69, 22.5.2008, J. L. Pérez-Chiscano & F. M. Vázquez (HSS 38666; isotypes: B, HSS, MA, herb. Perey-Chiscano).

Species Hispaniae meridionalis incola similis *Stipa clausae* et *S. cazorlensis* differt a *S. clausa* callo brevior, (2.2–)2.5–3 mm (nec (3–)3.5–5 mm) longo, apice lemmatis scabrido (nec laevi) et lodiculis inaequalibus (nec

1 Habitat Group, Forest Production Department, Research Centre of La Orden-Valdesequera, P.O. Box (Apartado) 22, 06080 Badajoz, Spain; *e-mail: frvazquez50@hotmail.com (author for correspondence).

2 c/ San Francisco, 50, 06700 Villanueva de la Serena, Badajoz, Spain

3 Habitat Group Dpto Ingeniería del Medio Agronómico y Forestal, Escuela de Ingenierías Agrarias, Universidad de Extremadura, Ctra de Cáceres s/n, 06071 Badajoz, Spain.

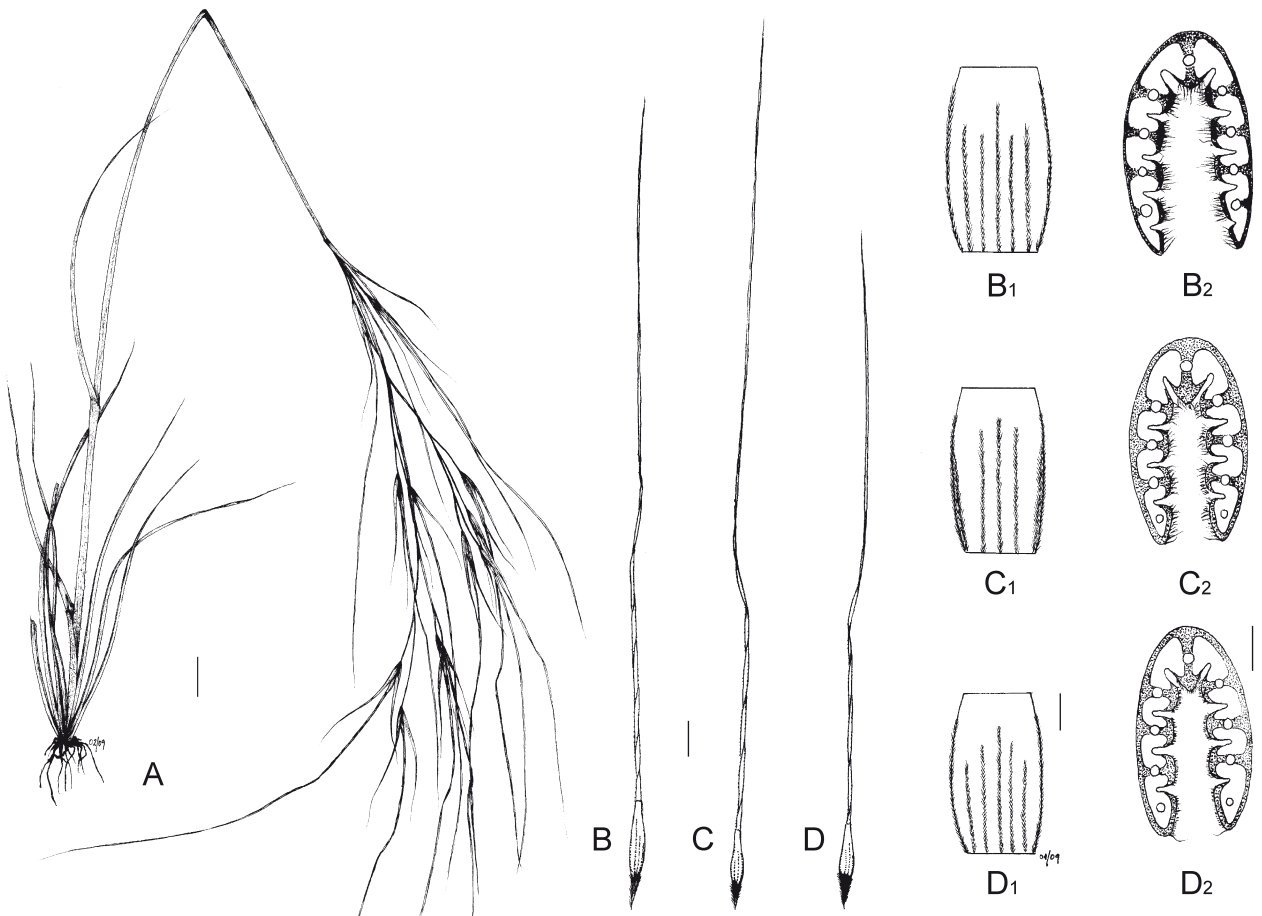


Fig. 1. A: *Stipa serena*, habit; B–D: awns, lemma hair distribution and blade section in the *S. clausa* group: B = *S. clausa*, C = *S. serena*, D = *S. cazorlensis*; ₁ = lemma hair distribution, ₂ = blade section. – Scale bars: A = 0.7 cm, B–D = 1 cm, ₁ = 2 mm, ₂ = 0.5 mm.

aequalibus); a *S. cazorlense* foliorum lamina adaxali pubescenti (nec scabrida), arista (25–)28–34(–36) mm (nec (1.7–)19–25(–28) mm) longa et lodiculis inaequalibus (nec aequalibus).

Description. — Culms up to 130 cm. Leaves with sheaths scabrid to pubescent, ligules of cauline leaves up to 2.2 mm, truncate, scabrid; blades convolute, 0.8–1.4 mm in diameter, adaxial surface pubescent of hairs to c. 1 mm

long, abaxial surface glabrous or scabrid, blades of the cauline leaves up to 24 cm, those of the vegetative shoots up to 28 cm. Panicle up to 65 cm, lax. Glumes subequal, linear, mostly green, usually five-veined, midvein setulose; lower glumes (50–)53–65(67) mm, upper glumes (52–)55–67(–70) mm. Anthechia 15–17 mm; calluses (2.2–) 2.5–3 mm acute; lemmas (12.5–)13–14 mm, with five lines of hairs up to 3 mm (two lines condensed); awn (25–)28–34(–36) cm, bigeniculate, scabrid;

Table 1. Main morphological and anatomical differences between *Stipa cazorlensis*, *S. clausa* and *S. serena*.

| Characters | <i>S. clausa</i> | <i>S. serena</i> | <i>S. cazorlensis</i> |
|--|-----------------------|-------------------------|----------------------------|
| Awn length [cm] | (22–)24–30(–35) | (25–)28–34(–36) | (17–)19–25(–28) |
| Lemma length [mm] | 12–15(–16) | (12.5–)13–14 | 11–13(–14) |
| Callus length [mm] | (3–)3.5–5 | (2.2–)2.5–3 | (2–)3–4(–5) |
| Lemma pubescence (Fig. 1B ₁ –D ₁) | 7 lines (independent) | 5 lines (two condensed) | 7 lines (independent) |
| Lemma apex | scabrid | glabrous | glabrous |
| Anterior lodicules | equal | unequal | equal |
| Anther apex | glabrous to pilose | glabrous | glabrous to pilose |
| Silica and suber cells of the lemma (Fig. 2) | unequal | subequal | unequal |
| Length of hairs on adaxial leaf surface | up to 3.5 mm | up to 1 mm | up to 0.6 mm |
| Length of hairs on adaxial leaf margin | as on the surface | as on the surface | longer than on the surface |
| Sheath indumentum in lower leaves | glabrous to scabrid | scabrid to pubescent | glabrous |

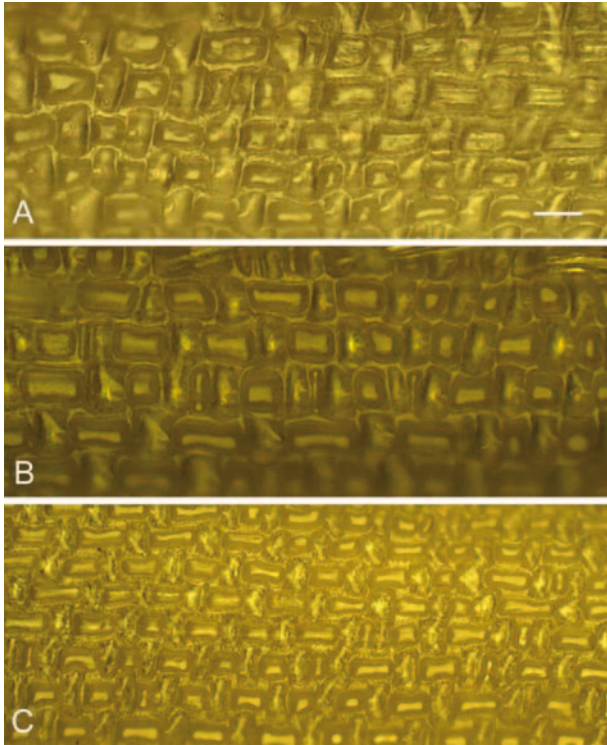


Fig. 2. Lemma surfaces of taxa in the *Stipa clausa* group – A: *S. serena* (HSS 38643); B: *S. clausa* (HSS 949); C: *S. cazorlensis* (HSS 7595). – Scale bar: 1 μ m.

column twisted; paleas 12–14 mm, with a fine pubescent line; lodicules three, the two anterior unequal; anthers 7–8.5 mm, yellow, without hairs; ovary with three styles and stigmas. Probably cleistogamous.

Flowering April to June.

Etymology. — The epithet refers to Quintana de la Serena, the provenance of the type collection.

Distribution and habitats. — The species is so far known from the provinces of Badajoz and Ciudad Real in southern Spain. It was found growing at altitudes of 300–700 m with a mean annual precipitation of less than 500 mm and high annual thermal contrast (min. of -4°C , max. of 45°C), in open areas of grassland on sandy, acid soil dominated by spring ephemerals, such as *Medicago* spp., *Trifolium* spp., *Vulpia* spp., *Bromus* spp. and *Anthemis* spp. The populations met each counted 12–45 individuals and occupied c. 300–750 m^2 .

Further specimen seen. — SPAIN: BADAJOZ: Campanario, 22.5.2008, J. L. Pérez-Chiscano & F. M. Vázquez (HSS 38644; 38643*). — CIUDAD REAL: Cabañeros [$39^{\circ}27'58''\text{N}$, $4^{\circ}50'25''\text{E}$], 5.6.1990, J. Á. Devesa & R. Tormo (UNEX 14419)

Delimitation. — Besides *Stipa serena* also *S. clausa* and *S. cazorlensis* occur in the Extremadura. *S. clausa* has leaf blades that are pubescent of up to c. 3.5 mm long

hairs on the adaxial surface, calluses (3–)3.5–5 mm long, and awns (22–)24–30(–35) cm long. *S. cazorlensis* has leaf blades that are scabrous on the upper surface and with longer hairs on the margins, calluses (2–)3–4(–5) mm long, and awns (17–)19–25(–28) cm long. In the latter two species, the lemmas have seven lines of hairs and the anterior lodicules are equal. *S. serena* has leaf blades that are pubescent of up to c. 1 mm long hairs on the upper surface, calluses (2.2–)2.5–3 mm long, and awns (25–)28–34(–36) cm long. It differs from both *S. clausa* and *S. cazorlensis* in having lemmas with only five lines of hairs and unequal anterior lodicules. Close examination reveals that the marginal two of the five lines represent two fused lines each (Fig. 1C₁).

The morphological and anatomical differences between the three taxa are summarized in Table 1.

Key to the species of the *Stipa clausa* group in the Iberian Peninsula and N Africa

1. Lemma with 5 lines of hairs; anthers with glabrous apex; anterior lodicules unequal; sheaths of the lower leaves scabrid to pubescent *S. serena*
- Lemma, with 7 lines of hairs; anthers with glabrous or pilose apex; anterior lodicules equal; sheaths of the lower leaves glabrous or scabrid 2
2. Awns (17–)19–25(–28) cm long; lemmas 11–13(–14) mm long; sheaths of the lower leaves glabrous
 *S. cazorlensis*
- Awns (22–)24–30(–35) cm long; lemmas 12–15(–16) mm long; sheaths of the lower leaves glabrous or scabrid *S. clausa*

Other material studied (* = specimen used for anatomical studies)

Stipa cazorlensis. — MOROCCO: Sok-et-Tnin, Beni Hadifa, 26.5.1927, P. Font Quer (BC 67643).

SPAIN: Almería, Sierra de María, 18.9.2001, S. Jacobs, P. Peñailillo & al. (HSS 7595*); Granada, Sierra de Baza, cerca de Narváez, 7.7.1984, J. Torres, G. Blanca & C. Morales (GDAC 26160); Pantano de Cubillana, 31.5.1987, C. Morales (GDAC 27811); Parque Natural Sierra del Castril, 15.7.1992, C. Morales & C. Passera (GDAC 37578); Puebla de Don Fadrique, 5.7.1979, P. F. Cannon & al. (SEV 53236); Sierra de Parapanda, 16.9.1985, Aroza & Socorro (GDA 19805); Jaén, Los Arenales, Cazorla, 19.7.1979, J. L. González & al. (MA 480635); Cambil, 28.4.1990, F. M. Vázquez (UNEX14864* holotype).

Stipa clausa. — SPAIN: Ávila, Barco de Ávila, 27.5.1990, F. M. Vázquez (UNEX 14407); San Lorenzo, 27.5.1990, F. M. Vázquez (HSS 948*); Cáceres, La Garganta, 6.7.2006, S. Ramos & F. M. Vázquez (HSS 26758*); Madrid, Aranjuez, 9.6.1991, F. M. Vázquez (UNEX 14421); Casa de Campo, without date, M. Lagasca (MA 185145 lectotype); Rascafría, 16.6.1990, S. García & F. M. Vázquez (HSS 949*); Palencia, Quintanar del Puerto, 9.7.1990, F. M. Vázquez (UNEX 14420); Segovia, Coca, 23.5.2006,

J. Blanco, C. Pinto & F. M. Vázquez (HSS 23993*); Teruel, Pozuelo del Campo, 16.6.1990, S. García & F. M. Vázquez (UNEX 14417); Toledo, Puebla de Don Fadrique, 13.5.1990, S. García & F. M. Vázquez (UNEX 14416); Valladolid, Medina del Campo, 16.6.1990, S. García & F. M. Vázquez (UNEX 14424); Tordesillas, 9.7.1990, F. M. Vázquez (UNEX 14406).

Acknowledgements

We thank Dr Ricardo Cabezas de Herrera (Badajoz) for translating the original diagnosis into Latin, the curators of the herbaria visited for their assistance and two anonymous reviewers for valuable comments on an earlier version. The research was funded through project nº PRI-III 3PR05A043 of the Regional Investigation Program of the Economía, Comercio e Innovación Consejería of Extremadura.

References

- Amaral Franco J. & Rocha Alfonso M. L. 1998: *Stipa* L. – Pp. 191–196 in: Amaral Franco J. & Rocha Alfonso M. L., Nova Flora de Portugal **3**(2). – Lisboa.
- Maire R. 1953: *Stipa* L. – Pp. 61–81 in: Maire R., Flore de l’Afrique du Nord 2. – *Encycl. Biol.* **33**.
- Moraldo B. 1986: Il genere *Stipa* L. (*Gramineae*) in Italia. – *Webbia* **40**: 203–278.
- Scholz H. 1991: *Stipa tunetana*, eine neue Art aus Tunesien, und das *St. lagascae* Aggregat (*Gramineae*). – *Willdenowia* **20**: 77–80.
- Scholz H. 1996: Die Taxonomie der *Stipa fontanesii* Parl., und *S. maroccana*, eine neue Art aus Marokko (*Gramineae*). – *Willdenowia* **26**: 225–228.
- Scholz H. 1998: *Stipa letournexii* subsp. *pellita* (Trin. & Rupr.) H. Scholz. – [In: Greuter W. & Raus T., Med-Checklist Notulae 17]. – *Willdenowia* **28**: 173.
- Talavera S. 1987: *Stipa* L. – Pp. 381–384 in: Valdés B., Talavera S. & Fernández E. (ed.), Flora de Andalucía occidental **3**. – Barcelona.
- Thiers B. 2008 [continuously updated]: Index Herbariorum: A global directory of public herbaria and associated staff. – <http://sweetgum.nybg.org/ih/>
- Trabut M. L. 1889: Révision des caractères des *Stipa gigantea* Lag., *Lagascae* R. et Sch., *Letournexii* sp. nov., *Fontanesii* Parlat.: Cleistogamie chez les *Stipa*. – *Bull. Soc. Bot. France* **36**: 404–433.
- Vázquez F. M. & Devesa J. A. 1996a: *Stipa clausa* Trab. (*Stipa* sect. *Leiostipa* Dumort., *Gramineae*) una especie olvidada del centro sur de la Península Ibérica. – *Anales Jard. Bot. Madrid* **54**: 407–414.
- Vázquez F. M. & Devesa J. A. 1996b: Revisión del género *Stipa* L. y *Nasella* Desv. (*Poaceae*) en la Península Ibérica e Islas Baleares. – *Acta Bot. Malac.* **21**: 125–189.
- Vázquez F. M. & Devesa J. A. 1997: Two new species and combinations in *Stipa* (*Gramineae*) from northwest Africa. – *Bot. J. Linn. Soc.* **124**: 201–209
- Vázquez F. M. & Devesa J. A. 2002: *Stipa* L. – Pp. 836–840 in: Valdés B., Rejdali M., Achhal El Kadmiri A., Jury J. L. & Montserrat J. M. (ed.), Catalogue des plantes vasculaires du nord du Maroc, incluant des clés d’identification. – Madrid.
- Vázquez F. M. & Ramos S. 2007: Two new taxa and a new combination for *Stipa* (*Gramineae*: *Stipeae*) in Tunisia. – *Bot. J. Linn. Soc.* **153**: 439–444. [CrossRef](#)
- Vázquez F. M., Scholz, H. & Sonnentag M. 1999: Dos nuevas especies y una combinación en el género *Stipa* L., sección *Leiostipa* Dumort. (*Poaceae*) para el SE de España. – *Acta Bot. Malac.* **24**: 27–32.