Stylosanthes seabrana (Leguminosae: Papilionoideae), a New Species from Bahia, Brazil

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ABSTRACT. During agronomic evaluation of introduced accessions of *Stylosanthes* Swartz in Colombia and Queensland, Australia, a genotype differing in morphology, chromosome number, and genetic markers was discovered. The new species *Stylosanthes seabrana* is closely related to *S. scabra* Vogel and has been collected in Bahia, Brazil. Two cultivars, 'Primar' and 'Unica,' of this species now newly recognized were released in Queensland, Australia, in 1996 for use as pasture legumes.

Key words: Bahia, diploid, genetic resources, germplasm, *Stylosanthes seabrana,* tropical pasture legume.

Within a large germplasm collection of *Stylosanthes scabra* Vogel at the Centro Internacional de Agricultura Tropical (CIAT), Colombia, Maass (1989) found plants that were morphologically, agronomically, and biochemically very different from *S. scabra,* while not belonging to any other known species within this genus. They were referred to as "cf. scabra-type" (Maass, 1989) and were also introduced to Queensland, Australia (Jansen & Edye, 1996), where they were called "aff. scabra" and became commonly known as "Caatinga stylo." Two cultivars, 'Primar' and 'Unica,' were released in Australia in 1996 for use as pasture legumes (Anonymous, 1996).

In the morphological study of Jansen and Edye (1996), the diploid accessions of "aff. scabra" were compared to *S. hamata* Taubert 'Verano' and *S. scabra* 'Seca,' which are both tetraploid (Oram, 1990; Stace & Cameron, 1987). However, these accessions from an undescribed taxon could morphologically be distinguished from *S. hamata* by their bristly leaflets (vs. non-bristly in *S. hamata*) and from *S. scabra* by their narrower and glabrous leaflets (vs. elliptical to obovate and pubescent in *S. scabra*) except for prominent viscid bristles on the lower surface and margins; prominent bristles on stem nodes and stipules, stipule teeth with long lateral bristles in combination with an absent or very short terminal bristle, bristles often on part of the internodes and on the inflorescence (vs. overall pubescence with occasional appearance of short, viscid bristles in *S. scabra,* but not as prominent); relatively longer pods and longer stylar remnants (beaks) (vs. shorter pods and beaks in *S. scabra*) (Jansen & Edye, 1996).

Additional morphological, rhizobial, cytological, and molecular evidence supports the conclusion that this is a separate, as yet unnamed, diploid ($2n = 20$) (Liu, 1997; Liu & Musial, 1997) species (Table 1), which belongs to *Stylosanthes* sect. *Styposanthes.* From genetic evidence, Liu et al. (1996) and Liu and Musial (1997) postulated that this unknown species and *S. viscosa* Swartz might be the putative diploid progenitors of the allotetraploid *S. scabra* ($2n = 40$). Unlike *S. scabra,* the unnamed species demonstrated a highly specific requirement for effective nitrogen-fixing strains of *Bradyrhizobium* (Date et al., 1996).

KEY TO *STYLOSANTHES SEABRANA, S. HAMATA,* AND *S. SCABRA*

1a. Beak equal to or exceeding the upper article, leaflets without bristles . . . . . *S. hamata*
1b. Beak shorter than the upper article, leaflets with bristles.
  2a. Leaflets narrowly elliptical, glabrous except for long bristles on the margins and midrib and prominently raised veins on the lower surface . . . . . *S. seabrana*
  2b. Leaflets elliptical to obovate, pubescent with bristles at least underneath or on the margins without prominently raised veins on the lower surface . . . . . *S. scabra*

Stylosanthes seabrana B. L. Maass & L. 't Mannetje, sp. nov. TYPE: Brazil. Bahia: State Road BA052 from Irecê 80 km to Xique-Xique, 10°56'S, 42°29'W, 29 June 1983, *L. Coradin, R. Baker, F. B. de Souza, R. M. Harley & S. Linington LC 6261* (holotype, CEN; isotypes, K, M, PAMG, RB, WAG).

Table 1. Herbarium specimens, germplasm accessions, and ploidy status of *Stylosanthes seabrana*.

Collector's number	Collectors	Latitude	Longitude	Herbarium specimens[1]	Other Herbaria[2]	Germplasm accessions[3]	Ploidy status[4]
LC 1172	Coradin, L.; Schultze-Kraft, R.; Da Silva, G. P.; Silva, J. C.	12°03′S	44°24′W	CEN, PAMG	CIAT	BRA-007951; CIAT 2050; CPI 110341	2x
LC 5186	Coradin, L.; Schultze-Kraft, R.; Da Silva, G. P.; Silva, J. C.	12°12′S	45°03′W	ILCA	CIAT	BRA-007901; CIAT 2043; CPI 110340; ILCA 15767	2x
LC 5208	Coradin, L.; Schultze-Kraft, R.; Da Silva, G. P.; Silva, J. C.	12°27′S	42°11′W	ILCA	CIAT	BRA-008095; CIAT 2070; CPI 092454; CPI 110342; ILCA 15768	2x
LC 5221	Coradin, L.; Schultze-Kraft, R.; Da Silva, G. P.; Silva, J. C.	12°27′S	41°39′W	ILCA	CIAT	BRA-008206; CIAT 2085; CPI 092463; CPI 110343; ILCA 15769	2x
LC 1234	Coradin, L.; Schultze-Kraft, R.; Da Silva, G. P.; Silva, J. C.	12°28′S	41°07′W	CEN, PAMG	CIAT	BRA-008915; CIAT 2107; CPI 092476; CPI 110344	n.a.
LC 1417	Coradin, L.; Vieira, J. G. A.; Silva, M. C. M.	9°54′S	40°15′W	—	CIAT	BRA-009318; CIAT 10517; CPI 110372	2x
75	Bastos	n.a.	n.a.	CEPEC, K	—	—	n.a.
1017	Hage, J. L. & Brito, H. S.	n.a.	n.a.	CEPEC, K	—	—	n.a.
LC 4335	Coradin, L.; Schultze-Kraft, R.; Da Silva, G. P.; Silva, J. C.	12°20′S	42°48′W	—	CIAT	BRA-022462; CIAT 10026; CPI 104710	n.a.
LC 4351	Coradin, L.; Schultze-Kraft, R.; Da Silva, G. P.	12°53′S	41°51′W	CEN, HUEFS, K, NY	CIAT	BRA-022594; CIAT 10113	n.a.
LC 4402	Coradin, L.; Schultze-Kraft, R.; Da Silva, G. P.; Silva, J. C.	12°33′S	41°06′W	—	CIAT	BRA-022811; CIAT 10033; CPI 110361 = cv. Unica	2x
LC 4447	Coradin, L.; Schultze-Kraft, R.; Da Silva, G. P.	12°40′S	41°33′W	CEN, ILCA	CIAT	BRA-022977; CIAT 10119; CPI 110370; ILCA 15793	(2x)[5]
LC 5782a	Coradin, L.; Da Silva, G. P.; Harley, R. M.	11°08′S	45°12′W	—	CIAT	BRA-029220; CIAT 10537	n.a.
LC 6257	Coradin, L.; Souza, F. B. de; Da Silva, G. P.; Vieira, J. G. A.; Baker, R.; Harley, R. M.; Linington, S.	11°29′S	41°20′W	—	CIAT	BRA-029327; CIAT 10547; CPI 110373	2x
LC 6171	Coradin, L.; Baker, R.; Souza, F. B. de; Harley, R. M.; Linington, S.	11°05′S	40°38′W	CEN, K, PAMG	—	MSB 48767	n.a.
LC 6261	Coradin, L.; Baker, R.; Souza, F. B. de; Harley, R. M.; Linington, S.	10°56′S	42°29′W	CEN, K, M, PAMG, RB, WAG	CIAT	BRA-028961; MSB 48918; CIAT 10471; ATF 2350	2x
2962	De Carvalho, A. M. & Saunders, J.	n.a.	n.a.	CEPEC, K	—	—	n.a.

[1] Registered in *Index Herbariorum*; specimens at ILCA from cultivated plants.

[2] Herbarium specimens from cultivated plants, maintained for reference of germplasm collections and not registered in *Index Herbariorum*.

[3] Prefixes of the germplasm registration systems of Centro Nacional de Recursos Genéticos e Biotecnologia (CENARGEN) = BRA; Centro Internacional de Agricultura Tropical = CIAT; Commonwealth Scientific and Industrial Research Organisation (CSIRO) = CPI or ATF; International Livestock Research Institute (ILRI) = ILCA; Millennium Seed Bank Project of the Royal Botanic Gardens, Kew = MSB. Additional passport information may be requested from the mentioned institutions.

[4] Assessed by Liu (1997) on the accessions introduced to Australia (CPI); n.a. = not available.

[5] Under this CPI accession number, there were different plant types, but not all were diploid.

S. scabrae affinis sed diploidea vice tetraploidea, rudimento axis multo longiore (> 6 mm), foliolis angustioribus et glabrescentibus infra et ad marginen setis longioribus vulgo viscidis munitis et infra venis manifeste prominentibus albidis munitis, dentibus stipularum setis lateralibus longis munitis, seta terminali nulla vel brevissima differt.

Perennial, woody at base; stems pilose on one side, except at base, viscid bristles (> 1 mm) near the nodes; stipules pilose, very bristly, long lateral bristles present on stipule teeth, but rarely with a terminal bristle, if so this very short. Leaflets lanceolate to elliptic-acute, upper surface glabrous, lower surface glabrous, except for long often viscid bristles on the midrib below and on the margins, veins raised, prominent below, whitish. Spikes capitate, small with several papilionaceous flowers, with obovoid sulphur-yellow standard. Each flower surrounded by a trifoliolate outer bract and two inner bracteoles, ciliate at the apex. Outer bract bristly, pilose on the margins, 3 pairs of veins. Axis rudiment reaching a height halfway up the upper article (7–8 mm long), pilose. Loment with 2 articles; the upper article appressed pilose to woolly, sometimes glabrous or slightly hairy on the inside of the beak (stylar remnant), with a clear central vein and weak lateral veins. Beak uncinate, pilose to woolly, half the length of the upper article (ca. 2–3 mm from base to top of the bend). The lower article densely pilose. Seed cream-colored. Chromosome number $2n = 20$.

Etymology. Specimens and several germplasm accessions from the region around the town of Seabra, in the Brazilian state of Bahia were among the earliest collections of the species.

Distribution. Endemic to Bahia, Brazil, between 9–13°S and 40–46°W.

Ecology. *Stylosanthes seabrana* occurs in areas with low rainfall, long dry seasons, mainly on medium to heavy textured red or yellow soils with Caatinga vegetation (Jones et al., 1996). It is often found growing sympatrically with *S. scabra*. The released cultivars in Queensland, Australia, are frost and anthracnose tolerant.

Paratypes. BRAZIL. **Bahia:** Mun. Barreiras, 28 Sep. 1978, *L. Coradin et al. LC 1172* (CEN, PAMG); Mun. Barreiras, 28 Sep. 1978, *L. Coradin et al. LC 5186* (ILCA); Mun. Seabra, 29 Sep. 1978, *L. Coradin et al. LC 5208* (ILCA); Mun. Seabra, 29 Sep. 1978, *L. Coradin et al. LC 5221* (ILCA); Mun. Seabra, 4 Oct. 1978, *L. Coradin et al. LC 1234* (CEN, PAMG); Rd. Irecê-Xique Xique 3 km NW of Irecê, 18 Feb. 1981, *Bastos 75* (CEPEC, K); Rd. Ilhéus–Itabuna km 22, 1 July 1981, *Hage & Brito 1017* (CEPEC, K); Mun. Boninal 52 km S from Rd. BR 242 to Piatã, 20 Aug. 1981, *L. Coradin et al. LC 4351* (CEN, HUEFS, K, NY); Mun. Palmeiras, 22 Aug. 1981, *L. Coradin et al. LC 4447* (CEN, ILCA); Rd. Jacobina–Lage do Batata km 15, 28 June 1983, *L. Coradin et al. LC 6171* (CEN, K, PAMG); Palmeiras ca. 250 km on Rd. BR 242, 19 Mar. 1990, *de Carvalho & Saunders 2962* (CEPEC, K).

Germplasm accessions. The largest part of the herbarium specimens listed here was collected during different germplasm collecting missions directed by L. Coradin from the Brazilian Centro Nacional de Recursos Genéticos e Biotecnologia (CENARGEN) in collaboration with scientists from CIAT (Coradin & Schultze-Kraft, 1990) or the Royal Botanic Gardens, Kew. For purposes of conservation, research, and breeding, seed of most of the collections is consequently stored in genebanks of the respective institutions as well as in other relevant genetic resource collections, such as the Commonwealth Scientific and Industrial Research Organisation (CSIRO) in Australia or the International Livestock Research Institute (ILRI) in Ethiopia (Table 1). A number of additional germplasm accessions that belong to the same diploid species were mentioned by Jansen and Edye (1996) and Liu (1997).

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