A NEW SPECIES OF *STYLOSANTHES* SW. (LEGUMINOSAE-PAPILIONOIDEAE) FROM PARANÁ, BRAZIL

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ABSTRACT

The description and illustration of a new species, *Stylosanthes vallsii* Sousa Costa & Van den Berg are provided. It is apparently endemic to Paraná State, Brazil, and morphologically similar to *S. maracajuensis* and *S. leiocarpa*, being separated from both by the short capitate inflorescences and from each individually from details in the stipules, bract leaflets, and loment indument.

Stylosanthes is a tropical legume genus mainly from Central and South America (Williams et al., 1984; Lewis et al., 2005), and especially Brazil, in which 63% of the species occur (Ferreira & Sousa Costa, 1977, 1979; Sousa Costa & Ferreira, 1984). The Brazilian states of Mato Grosso do Sul, Minas Gerais, and Paraná are especially rich in species and ecotypes. Paraná state presents a transition between the tropical and subtropical climatic regions and it harbours a considerable variability for some *Stylosanthes* species such as *S. bracteata* Vogel, *S. gracilis* Kunth, *S. grandifolia* M.B.Ferreira & Sousa Costa, *S. guianensis* (Aubl.) Sw., *S. montevidensis* Vogel, *S. hippocampoides* Mohlenbr., *S. longiseta* Micheli, *S. scabra* Vogel, and *S. viscosa* Sw. The new species has been collected at the Guarapuava municipality, at 25º 26' S, 51º 50' W.

This species has been known and named for a long time, but the description was delayed due to difficulties in obtaining materials from Brazilian herbaria at the time.

Stylosanthes vallsii Sousa Costa & Van den Berg **sp. nov.**, Typus (hic designatus): BRAZIL: Paraná, Guarapuava, main road to Cascavel (BR-277), ca 35.5 km W of Guarapuava, 25º 26' S, 51º 48' W, 1060 m above sea level, 29 Dec 1987, *J. F. M. Valls, G. P. Silva, K. E. Gomes 11380*, (holotypus CEN; isotypi IBPGR, LISI). Figs.1 and 2.

S. maracajuensis Sousa Costa & Van den Berg et S. leiocarpae Vogel affinis. Differt ab ambabus speciebus inflorescentiis capitatis brevibus (in S. leiocarpa oblongis et in S. maracajuense angustis imbricatis congestis), a S. maracajuense foliolis stipularibus cum 3-4 paribus venarum inconspicuis instructis (non 7-9 paribus venarum conspicuarum), bracteis cum foliolis sessilibus linearibus quam dentibus longioribus (et non foliolis triangularibus vel ovato-lanceolatis quam dentibus brevioribus), articulo superiore glabro vel subglabro fortiter reticulato (in ea laeve inconspicue nervato), rostro late circinato ad basim incrassato, a S. leiocarpa bracteis cum foliolis oblongis petiolatis latiorisque, articulis ambibus fertilibus glabris, rostro uncinato vel subrecto longiori.

Figure 1. *Stylosanthes val*[illegible]. Habit. Scale bar=2 cm. Drawn from the type (*Valls et al. 11380*)

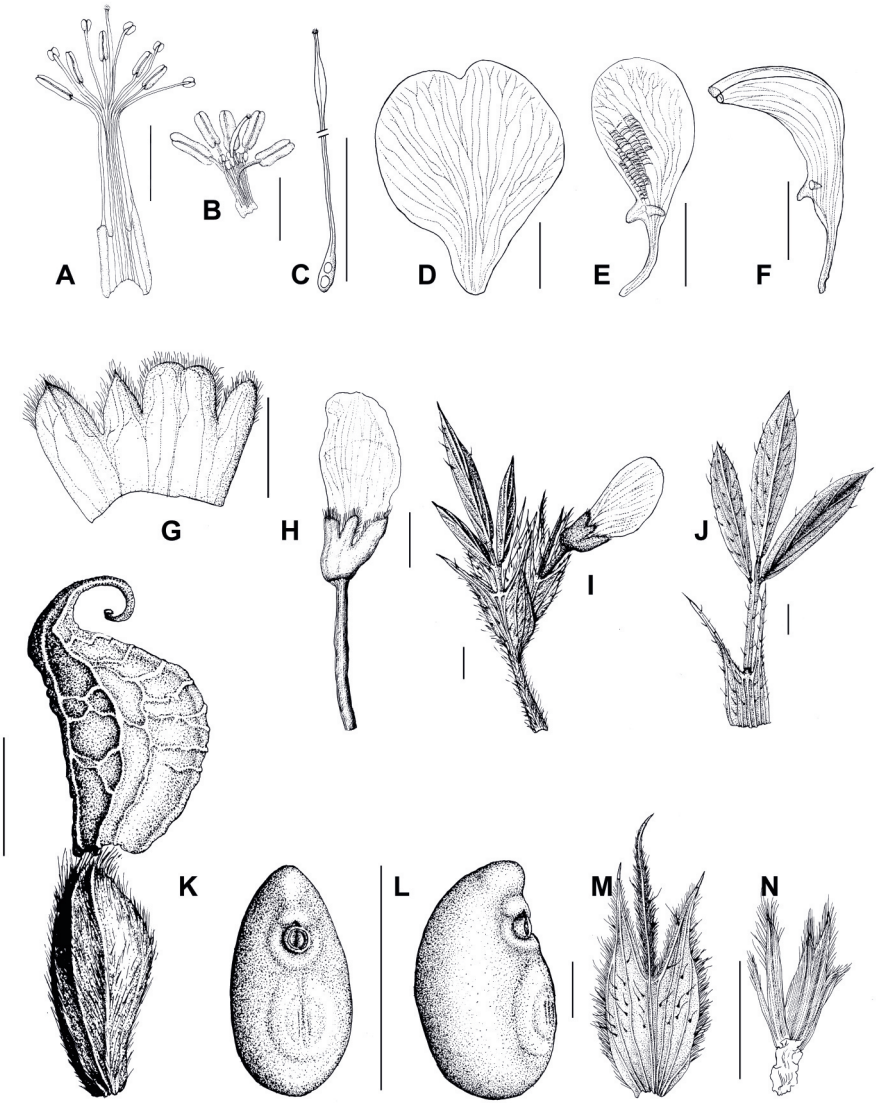

Figure 2. *Stylosanthes vallsii*. A. Androecium just after anthesis, observe the relative position of the dimorphic anthers before and after flower anthesis. B. Androecium just before anthesis. C. Gynoecium. D. Standard petal. E. Wing Petal. F. Keel petal. G. Calyx (opened out). H. Flowers. I. Inflorescence with trifoliolate external bract and flower. J. Stipules and leaves. K. Loment. L. Secondary bracts. M. Bracteoles. Scale bars: 2mm (A-I), 2mm (small) and 5mm (large) (J), 2mm (K-N). Drawn by P.M. Rodrígues-González from *Valls et al. 11380*.

Perennial prostrate subshrub; main root straight, secondary roots thickened; stems creeping or ascending, up to 15–25 cm long, 1–1.5 mm in diameter, densely pilose- bristly, not viscid. Stipule with amplexicaul sheath, pubescent-bristly, often purplish, 5–6 × 4.5–6 mm, with 4–5 pairs of conspicuous veins; teeth with sparse bristles, 3.5–5 mm long, base triangular, free portion straight or subulate, ending by a bristle. Petiole hairy-bristly, slightly canaliculate, 7–10 mm long; petiolule 3.5–4.5 mm long including well-developed articulations, hairy with sparse bristles; leaflets somewhat polymorphic; terminal leaflet oblong to linear, base acute, apex acute to obtuse and mucronate, 10–25 × 3–4.5 mm, upper surface with 3–4 pairs of thin veins, nearly glabrous or sparsely bristly, often purplish; lower surface with obscure nerves, pilose-bristly. Spike terminal or axillary, 10–20 × 6–8 mm, oblong, dense, isolated or grouped in 2 (–3); peduncles 10–35 mm long; first bract quite variable, usually trifoliolate, similar to the leaves, albeit smaller, otherwise unifoliolate, then leaflet linear, almost always petiolate and biarticulate, sheath, 3.6–5 × 3.2–3.8 mm, 3–4 pairs of conspicuous veins, teeth of bracts triangular, acute and aristate in the tip, hairy–bristly; secondary bract unifoliate, sheath 3.6–5 × 3.2–3.8 mm, teeth 3.5–5 mm, leaflet 4–6 × 0.3–0.6 mm, linear, generally sessile, tip apiculate, hairy-bristly non-viscid, bracteoles 2, hyaline, margins ciliate, outer bracteole entire or 2 (–3) cleft, 2.3–2.5 × 0.6–8 mm, inner bracteole usually entire or 2–cleft, 2.2–2.3 × 0.2–0.3 mm, rudimentary axis absent. Flowers exserted; calyx 7–10 mm long, lobes 5, margin ciliate, internal and external surfaces glabrous, lower lobe longest, 2.8–3.8 × 1–1.2 mm, keel-like, lateral lobes acute, upper lobe obtuse, slightly emarginate; petals yellow, standard petal suborbicular, retuse, striate by purple lines on both faces, 5.5–8 × 4.5–7 mm; wings obovate, 3.5–5 × 2–3.5 mm, spurred at the base, spur 0.5–0.7 mm at the base, 0.5–0.7 mm long, with a strong, appendages a little upper articulating with the auricle of the keel, pleat folds on the blade, between the 5 first veins at the spur side; keel petals together 1.8–2 mm long, tubular, biconic at the tip, each with a claw of 1.7–1.9 mm long, deeply falcate, round-shaped section in transverse section up to half of its length, 1.1–1.6 diameter, spurred and auriculate at the base, the auricle open to outside, developed to inside; androecium monadelphous, filaments fused up to 2/3 of their length forming a tube 3.5–5 mm long; anthers dimorphic, the shorter 5 basifixed, 1–1.3 × 0.25–0.35 mm, the longer 5 dorsifixed, 0.25–0.30 × 0.25–0.30 mm; gynoecium 9–12 mm long, ovary biarticulate, style slightly dilated near the heigth where the filaments become free, stigma discoid. Loment ovoid, a little compressed laterally, with 1 (–2) fertile articles; lower article 3.5–4.7 × 1.7–2.2 mm, pubescent to pilose, with white hairs adpressed to the surface; upper article 3–4 × 2–2.5 mm, glabrous or slightly pubescent, strongly reticulate, beak 0.8–1.2 mm long, strongly hooked, thicker near the base, wide curved, glabrous. Seed brown some times blushed, ovoid in both frontally or laterally, 2–2.3 × 1.1–1.4 × 0.8–1.1 mm; radicular lobe with a conic tip; hilum easily observed at microscope, micropyle little evident just above hilum; aril edge forming the wall of hilum entrance, yellow, very different from the seed tegument surface; aril encircling the hilum and micropyle in a small convex zone of different hue in relation to the tegument; raphe in a small elevation of the tegument closer to the base than to the hilum.

PARATYPE. BRAZIL. Paraná, Guarapuava, main road to Cascavel (BR-277), ca 35.5 km W of Guarapuava, 25º 26’ 04” S, 51º 48’ 31” W, 1060 m above sea level, 21/02/2002, *J. F. M. Valls, A.Guglieri, L. Essi 14831*, (CEN; LISI).

DISTRIBUTION AND HABITAT. *Stylosanthes vallsii* has so far been found only in the municipality of Guarapuava, Paraná, Brazil, in gently undulate relief. It is frequent on the area, either as isolate plants or in dense populations, growing on shallow basaltic flagged lithosols, with moss and short grasses.

ETIMOLOGY. It is named after José F. M. Valls, researcher of EMBRAPA-CENARGEN, Brazil, who collected this specimen and highlighted its differences. We honour him also due to his work and studies, during many years, on tropical and subtropical Brazilian legumes and grasses.

RELATIONSHIPS AND DNA SEQUENCE. This species belongs to the section *Stylosanthes*, because of the single inner bracteole and absence of an axis rudiment. The new species share some morphological features with *S. maracajuensis* Sousa Costa & Van den Berg and *S. leiocarpa* Vogel. However, it can be separated from both species by the short, capitate inflorescences, from *S. maracajuensis* by possessing in the stipules only 3-4 pairs of inconspicuous veins, bract leaflets linear, as long as the teeth, and upper articles of the loment glabrous; and from *S. leiocarpa* by wider bracts, petiolate oblong leaflets, loment with both articles glabrous, and longer rostrum. The Internal Transcribed Spacer (ITS) of nrDNA sequence data of this species has been partially sequenced from herbarium material and is deposited in Genbank under the accession number DQ157449. Preliminary phylogenetic analyses of this sequence placed *S. vallsii* in a group which includes *S. ruellioides*, *S. tomentosa*, and *S. sympodialis*, species whose morphologies are rather distinct to the point they do not need comparison for diagnosis. In fact, these three species have been placed in a different section (*Styposanthes*), suggesting the need for urgent revision of the *Stylosanthes* sections.

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