



Phenetic analysis of the complex *Senna fabrisii*—*S. trichosepala* (Leguminosae, Caesalpinioideae, *Aphyllae*) based on morphological characters and seed protein electrophoretic profiles

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Abstract

Multivariate and univariate analyses based on morphological characters and seed soluble protein electrophoretic profiles were carried out in order to understand the taxonomic status within the complex *S. fabrisii*-*S. trichosepala*. Twenty morphological characters from herbarium specimens were recorded and analyzed by ANOVA, principal component and cluster analysis. The seed protein electrophoretic analysis including cluster analysis was based on three populations: one of *S. fabrisii* and two of *S. trichosepala*. The results showed that both taxa differed only by three morphological features; in parallel, the CPA and CA demonstrate that no clearly separated group can be recognized. The seed protein electrophoretic profiles show a high degree of similarity. Based on these results, and due to the variability observed, the inclusion of *S. fabrisii* in the synonymy of *S. trichosepala* is proposed.

Key words: *Aphyllae*, morphometrical analyses, quantitative characters, *Senna*, taxonomic position

Introduction

Senna Miller (1754: 290) Series *Aphyllae* Bentham (1871: 542) occurs in southern Bolivia, from central to northwestern Argentina and in southeastern Paraguay. This series was previously considered under the genus *Cassia* Linnaeus (1753: 376), for which Burkart (1952) recognized five species; later Bravo (1978) described new taxa and distinguished 11 species. Irwin & Barneby (1982), based on morphological, vegetative and reproductive characters, divided *Cassia s.l.* into three genera: *Senna*, *Chamaecrista* Moench (1794: 272) and *Cassia (s. s.)*. The series *Aphyllae* was included by Irwin & Barneby (1982) in *Senna* and they accepted the taxonomic proposal made by Bravo (1978). Robbiati *et al.* (2011) recognized seven species based on a new morphological evaluation of the diagnostic characters in the series. The differentiation of the species was based especially on habit, floral piece pubescence and divergence angle of branches. However, in many cases, the delimitation of species is difficult due to the absence of leaves and the similarity in many features especially of flower and pod, and has led to a conflicting circumscription with taxonomic confusion (Burkart 1952, Bravo 1978, Irwin & Barneby 1982, Robbiati *et al.* 2011).

Within the ser. *Aphyllae*, *S. fabrisii* (L. Bravo) H. S. Irwin & Barneby (1982: 570) and *S. trichosepala* (Chodat & Wilczek) H. S. Irwin & Barneby (1982: 570) form a complex characterized by the pubescence of the floral parts, especially the gynoeceum and sepals; the habit; by having spiny branches; and by co-occurrence (sympatry). These species inhabit the provinces of central and western Argentina: Catamarca, La Rioja, Mendoza, San Juan and San Luis. Bravo (1978) differentiated both species by calyx, ovary and pod pubescence and anther length of long abaxial stamens. On the other hand, in the same work she pointed out

peduncle and pedicel both glabrous to densely pubescent. Calyx glabrous to densely pubescent, the 2 smaller sepals 4–7 mm long, 2–4 mm wide and the 3 larger sepals 6–8 mm long, 4–6 mm wide. Petals 7–22 mm long, 4–12 mm wide. Androecium: 3 anthers of long abaxial stamens 4.0–6.5 mm long, and filament 1.5–11 mm long; 4 anthers of median stamens 3–4 mm long, and filament 1–2 mm long and 3 staminodials 1–2 mm long, and filament 1–3 mm long. Gynoecium 10–12 mm long, 0.75–1.0 mm wide, glabrous to densely pubescent. Pods 7.3–12.2 mm long, 4.0–5.5 mm wide, glabrous to sparsely pubescent. Seeds 3.5–4.5 mm long, 3.0–3.5 mm wide.

Distribution:—Catamarca, La Rioja, Mendoza, San Juan and San Luis provinces in the central and western area of Argentina. Inhabiting rocky and sandy soils.

Additional specimens examined:—ARGENTINA. Catamarca: Belén, pendiente de Belén, entre Andalgalá y Belén, 24 January 2005, *Barboza 1146* (CORD); La Rioja: Arauco, en el monte, 22 March 1944, *Hunziker 5101* (CORD); Chilecito, 7 April 1906, *Stuckert 15742* (CORD); *Hunziker 4282* (CORD). Entre San Miguel y Malingasta, February 1962, *Dawson 3384* (CTES); Independencia, Cueva del Chacho, entre Patquía y Los Colorados, 30 November 1961, *Cocucci 367* (CORD); 30 km al noroeste de Patquía, 5 February 1973, *Hunziker 9508* (CORD); Mendoza: Las Heras, Salangasta, 21 December 1991, *Lutz 106* (CTES); Uspallata, 20 December 1949, *Barkley 815* (LIL); 22 km al sur de Tucunuco, 30° 51' S 68° 37' W, 7 March 2011, *Fortunato 9914* (BAB); 12 km al este de Rodeo, sobre ruta nacional 150, 30° 12' S 69° 02' W, 20 January 1997, *Fortunato 5564* (BAB); 25 de Mayo, 12 km al este de Encon, sobre ruta nacional 20, 32° 12' S 67° 40' W, 6 March 2011, *Fortunato 9913* (BAB).

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