



Fruit as diagnostic characteristic to recognize Brazilian species of *Zornia* (Leguminosae, Papilionoideae)

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Abstract

Articles of the lomentaceous fruits encountered in the thirty-six species of Brazilian *Zornia* species are described, illustrated and compared using scanning electron microscopy and stereomicroscopy. Macro- and micro-morphological characters of the fruit articles provide excellent diagnostic taxonomic characters (including fruit shape, fruit article surface, presence/absence of glands, presence/absence of bristles, and presence/absence of hairs) to distinguish among the Brazilian taxa. Results generally support the species recognised for Brazil although the micro-morphological characters have limited taxonomic value within some species complexes, in which taxa can be better differentiated using other morphological characteristics. The results of macro-morphological analyses show that the morphology of fruit articles is related to the geographical distribution pattern of each species and is a good source of morphological character to distinguish the species of *Zornia*. We present here an inedit identification key, based on the loment morphology, to distinguish the Brazilian species of *Zornia*.

Key words: Dalbergieae, Fabaceae, Faboideae, lomentum, morphology, Scanning Electron Microscopy (SEM)

Introduction

Zornia Gmelin (1791: 1076) comprises 80 species, mainly distributed in tropical and subtropical regions of the world (Klitgaard & Lavin 2005). In Brazil, the genus is represented by 36 species (Fortuna-Perez & Tozzi 2011). *Zornia* belongs to the informal Adesmia clade of the Dalbergioid legumes (Lavin *et al.* 2001) and includes herbs and shrubs, with flowers arranged in spiciform inflorescences, paired peltate bracteoles protecting each flower, and stipules that resemble the bracteoles (Fortuna-Perez 2009). The most recent systematic treatment of the genus was published by Mohlenbrock (1961), who recognized two subgenera: *Zornia* subg. *Myriadena* (Desvaux 1813: 121) Mohlenbrock (1961: 16) and *Z.* subg. *Zornia* (differentiated by inflorescence morphology), and three sections (*Z.* sect. *Zornia*, *Z.* sect. *Isophylla* Mohlenbrock (1961: 49) and *Z.* sect. *Anisophylla* Mohlenbrock (1961: 78) within *Z.* subg. *Zornia*. *Zornia* sect. *Zornia* possesses leaves with four leaflets, while the other two sections have species with two leaflets per leaf. *Zornia* sect. *Isophylla* and sect. *Anisophylla* are separated from each other by leaflet shape. In *Z.* sect. *Isophylla* leaflets are all of the same shape within any one plant. By contrast, in all species of *Z.* sect. *Anisophylla* in any one plant the leaflets of the lower leaves are always different in form from those of the upper leaves.

Mohlenbrock (1961) reestablished several species previously considered to be infra-specific taxa, and used the morphological characteristics of fruits, calyces and bracteoles to diagnose each species. For some species, however, Mohlenbrock (*loc. cit.*) did not comprehensively analyse the amplitude of intra-specific variation and some of his species circumscriptions lack detail, resulting in poorly defined and overlapping putative diagnostic characters (Fortuna-Perez 2005).

Studies of micromorphological characters have proved useful in taxonomy at different hierarchical levels, as