An interactive key for Brazilian genera of Plantaginaceae Juss.

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Abstract
Here we present an interactive key for the Brazilian genera of Plantaginaceae, using Xper3 plataform, based on morphological data from literature and herbarium material. Seventeen genera, 26 characters and 77 character states were included, in addition to photos and descriptions of taxa and characters. This tool can be constantly updated, is easy to understand and suitable for both specialists and general public, and allows taxa identification even in the absence of some characters. The final version of our key will be available online for public use.

Key words: Multi-access, identification, Xper3

Introduction
The Plantaginaceae (Lamiales) had its circumscription expanded after the inclusion of several genera previously recognized in the Scrophulariaceae sensu lato1, currently comprising ca. 90 genera and 1900 species2. In Brazil, there are 26 genera, of which 17 are native, including five restricted to the Brazilian territory and other eight with endemic species3. Brazilian representatives of Plantaginaceae usually occur in open and wet areas of the Cerrado, Atlantic Forest and Caatinga Biomes, all of them threatened by human activities. The family exhibit a great morphological diversity, including aquatic herbs with reduced flowers (Callitriche spp.), weeds (Plantago spp., Scoparia dulcis, Stemodia spp.), shrubs with very showy and specialized flowers (Angelonia spp.), and even carnivorous species with unique morphology (Philcoxia spp.). All this variation may difficult the delimitation and identification of intratamilial taxa. The most account of the Scrophulariaceae s.l. from Brazil includes a dichotomous key for native genera of Plantaginaceae4. However, this kind of identification tool is dependent of characteristics not always present, such as flower and/or fruits, for example. Alternatively, there are interactive keys, multi-access online tools for taxa identification. Here we present an interactive key to identify Brazilian genera of Plantaginaceae.

Results and Discussion
Our key is being developed in Xper3 plataform (www.xper.com), based on a matrix with vegetative and reproductive characters extracted from literature4,5 and herbarium material. The taxa included are based on the Lista de Espécies da Flora do Brasil6. The key includes 17 genera, 26 characters and 77 character states, along with images and descriptions of taxa and characters. The software can be used directly online, without installation, and provides a link to where the key is hosted after it is complete. The main advantages of our key are the possibility to: 1) identify taxa even in the absence of some characters; 2) constantly update taxa and characters; 3) insert descriptions of terms, which make it easier for use by general public.

Conclusions
Our interactive key is an important tool for identifying Brazilian genera of Plantaginaceae, for both specialists and general public, and will be available online once the final version is complete.

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Image 1. Examples of Brazilian Plantaginaceae. From left to right: Plantago commersoniana, Angelonia tomentosa, Philcoxia rhizomatosa.

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