# Modern phytolith assemblages from vereda wetlands in Minas Gerais cerrado, Brazil

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## Résumé

The vegetation of the Brazilian cerrado has very diverse structures which range between grassland and dense forest. Within this matrix, distinctive wetlands termed veredas are present around slow-flowing water courses characterized by deposits and lines of palm trees marking confined water flow and fen peat but also with riparian scrub patches beside streams, plus lakes of varying size. The vereda grasslands are dominated by Poaceae, palm lines by Arecaceae (*Mauritia flexuosa, Mauritiella armata*), with Melastomataceae and Annonaceae as riparian scrub. Juncaceae are dominant around lake edges. Modern Phytolith Assemblages (MA) from vereda wetland are not well studied. The objective here is to acquire Pa/P (Palm trees/Poaceae) and other indices from the main vegetation structures within the two hydro-geomorphological domains of a cerrado drainage basin: veredas and lakes. The MA collected are: veredas with *Mauritia flexuosa, Mauritiella armata* and Annonaceae (MA1); Juncaceae at lake edges (MA2, MA3); vereda with forest cover and presence of Melastomataceae (MA4); vereda with predominance of Annonaceae (MA5); grassland in the vereda's hydromorphic field (MA6). Results will be used to interpret subsequent sedimentary analysis of vereda deposits. The study area is located within the River Peruaçu drainage basin (Minas Gerais, Southeastern Brazil) which has relatively undisturbed examples from vereda ecosystems. The extraction of the phytholiths from field surface samples followed standard methods. The morphotypes of each sample were identified and counted under the microscope. Pa/P index values are highest for MA4 (5.08) and MA1 (2.99) which represent hydrophilic ecosystems dominated by palm trees, with a smaller value for MA5 (0.57) which is dominated by Annonaceae. In addition to the Pa/P index, Bi index (water stress index) was calculated as well as the D/P ratio (Dicotyledons/Poaceae). Bi index values are higher in the environments near the lakes, MA2 (Lagoa Formosa) with 95.14% and MA3 (Lagoa Jatoba) 54.38%. Only one habitat has a low Bi index (MA1 (8.47%)), probably because its plants are developed in fluvial channels closer to groundwater, with tree roots systems capable of tapping water during dry periods. MA5 is the non-lake habitat with the highest

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Bi index (81.28%). The extensive MA6 grass-dominated zone has a value of 38.78%. High Bi index values are therefore found for all habitats except MA1, suggesting that water stress in the winter dry season is a major factor affecting most vereda habitats, including lakes. D/P results show that the cerrado domain surrounding the vereda is very weakly represented in modern assemblage records. Only MA6 seasonally-wet grassland contains phytoliths corresponding to woody species that could have come from the Cerrado (D/P = 0.19), probably carried by runoff from adjacent hillslopes. Overall, Pa/P, Bi and D/P values suggest that the current habitats are recognizable and separable using phytolith analysis. They additionally suggest that the vereda landscape could be discriminated from the surrounding cerrado on the basis of phytolith records.

**Mots-Clés:** Phytoliths, Modern Assemblages, Cerrado Biome, Vereda Wetland