
Variations in morphology and type of phytoliths according to the age of leaves and position in the vegetal body in *Brachiaria decumbens*

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Résumé

Brachiaria decumbens is a Poaceae that accumulates large amounts of phytoliths. Previous studies have shown that the quantity of silica and phytoliths increases with the age of the leaves. Based on these observations, this study aimed to verify changes in the morphological development of phytoliths depending on the age of the leaf, as well as changes in typology according to the part of the plant where they are found (leaf, root, stem and seed). For this, samples of root, stem, seed and leaves of different ages were collected for individuals of the *Brachiaria decumbens* species, which grew spontaneously in the campus soil of the Institute of Agricultural Sciences - UFMG / Montes Claros. The leaves were rated on a scale from zero (F-0) for the youngest and nine (F-9) for the oldest, these being already senescent. We used three techniques for the extraction and visualization of the phytoliths: clarification of the plant tissue with sodium hypochlorite, wet oxidation and calcination in muffle. The analysis of the phytoliths involved weighing and counting, using optical microscopy, and description and classification according to ICPN denomination. It was found that phytolith formation starts as soon as the tissues of the leaves begin to differentiate in the very young stage (F-0), when the leaves were still curled. The mass of phytoliths increases with the age of the leaves, indicating that the cause of greater roughness in the leaf with age may be due to the increase in the amount of phytoliths. In all the leaves the same types of phytoliths were found: short cell bilobate, polylobate, cross and long cell elongate echinate both sides, elongate echinate one side and elongate psilate, as well as silicified stomata. At the edges of the leaves a differentiated structure with continuous sheaves can be found, whereby the bilobate type phytoliths have become larger and more flattened. Despite the increase in phytolith mass with increasing age of the leaves, there was no significant difference in the proportion of morphotypes produced or in the size of the phytoliths. In seeds, elongate echinate type phytoliths have a sinuous flattened shape and bilobate type phytoliths are still in formation, being very rounded and small in size. In the roots short-cell bilobate and cross types were not found, but there was the rondel type, which seems to be situated in the Casparian strip (which may have significant endoderm protection functions). In the stem a significant amount of phytoliths (2.7% of the initial weight) were found, these being of the same morphotypes as the leaves, as well as having the same tissue structure, organization and size of phytolith.

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Mots-Clés: Poaceae, Panicoideae, plant morphology, senescence