

Ornamentation of achene silica walls and its contribution to the systematics of *Eleocharis* (Cyperaceae)

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Abstract

Micromorphology of the achene surface of 2 Brazilian species of *Eleocharis* was studied by scanning electron microscopy in order to evaluate its usefulness in the taxonomy of the genus. The results point out two patterns of cell organization according to silica structures of achenes. The first corresponds to a group of species (group A) that have small to medium cells arranged vertically. The second is found in those species (group B) with medium to large cells arranged horizontally. These data were useful in separating species of *Eleocharis* subgenus *Scirpidium* and *E. subgenus Limnochloa* (group B) from *E. subgenus Eleocharis* (group A). However, group A shows considerable variation in silica wall arrangement. *Eleocharis squamigera*, previously considered as part of *E. subgenus Eleocharis*, shows features rather similar to those of *Scirpidium*, confirming recent phylogenies. The subgenus *Limnochloa* was clearly distinguished from others by achenes with large cells (over 55 μm width), presence of crenate or repand anticlinal walls, and some orifices near the wall in some species. The silica wall ornamentation seems to be a useful morphological tool for studying relationships between subgenera and distinguishes *Limnochloa* from the other subgenera.

Keywords Achenes _ Micromorphology _ Scanning electron microscopy _ Silica wall