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Ecotypical Flower Biometry in the Neotropical Oilseed Palm *Acrocomia*

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Abstract

The neotropical oilseed palm *Acrocomia* is considered a sustainable alternative to African oil palm in sub-humid tropical regions due to its high oil yield and adaptation to many diverse environments.

The inflorescences of *Acrocomia* are panicles with several hundred rachillae bearing female and male flowers. The female flowers are globose, sessile and spirally arranged at the basal end of the rachillae. The apical two thirds of the rachillae bear dense spirals of solitary male flowers. The inflorescences are surrounded by a bract leaf before anthesis. *Acrocomia* is protogynous and upon bract opening, female flowers are receptive for around 24–48 hours. Anthesis of male flowers starts 24 hours after bract opening and their abscission is initiated on the fourth day. General morpho-anatomic and biometric studies on *Acrocomia* flowers already provided relevant information on the reproductive biology of *Acrocomia*; however, differences between ecotypes were not assessed up to now. This study aimed to gain detailed knowledge on flower biometry in ecotypes of *A. totai* and *A. aculeata* originating from different climatic regions in Brazil.

The study was conducted at the *Acrocomia* Active Germplasm Bank of the Universidade Federal de Viçosa in Araponga, MG, Brazil. Nine rachillae from each inflorescences of five ecotypes were sampled in the flowering season of 2019. The length of the rachillae, and the number of female and male flowers were recorded. Their fresh and dry weight were measured. The height and diameters of female flowers were determined.

Acrocomia totai ecotypes showed higher numbers of small, light weighted female flowers per rachillae. *A. aculeata* tended to bigger and heavier female flowers but fewer in numbers per rachillae. In all ecotypes the number of female and male flowers decreased on the rachillae from the basal to the apical end of the inflorescence. However, only 17% of the rachillae had 6–8 female flowers, considered optimal for a good yield formation. *Acrocomia* shows a requirement for genetic improvement but also a high capacity due to a wide genotypical and ecotypical variability important for the selection of superior breeding material.

Keywords: *Acrocomia aculeata*, *Acrocomia totai*, Brazil, diversity, flower biometry, oilseed palms