Population structure of *Annona crassiflora*: an endemic plant species of the Brazilian Cerrado

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ABSTRACT. Habitat fragmentation has numerous consequences, particularly to endemic species, and has a negative impact on the genetic diversity of neglected species, leading to genetic drift. *Annona crassiflora* Mart. is a species that is endemic to Brazil, and its incidence in the Cerrado biome has decreased. The identification and characterization of its remaining diversity is necessary for its conservation. Our aim was to study the population structure of *A. crassiflora* populations from different Cerrado regions in Minas Gerais State, Brazil (Corinto, Curvelo, Carmo da Mata, Boa Esperança, and Paraguaçu) using inter-simple sequence repeat (ISSR) markers and DNA content. Nuclear DNA content was estimated by flow cytometry using 10 individuals from each population. ISSR markers were used for genotyping accessions in order to study their genetic diversity and population structures. We found considerable genetic variation among

populations, with the highest variability observed in the Curvelo population. There was a significant positive correlation between DNA content and latitude ($r = 0.46$, $P = 0.0003$). A Bayesian-based cluster analysis grouped the populations into three clusters, which followed their geographical origins. There was some level of genetic diversity and differentiation among the populations, suggesting the need for a conservation plan for this species. The ISSR markers and DNA content analysis were effective in studying the genetic diversity and population structure of *A. crassiflora*.

Key words: Flow cytometry; Marolo; ISSR marker; *Annona crassiflora*