Genetic diversity of *Melipona mandacaia*, Smith 1863 in natural and rational breeding populations

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The diversity and genetic structure of natural and rational breeding populations of *Melipona mandacaia* in the city of Petrolina-PE-Brazil is analysed in this study. Worker bees from four different locations in the city were genotyped with four inter-simple sequence repeats molecular genetic markers. The presence and absence of DNA fragments were converted into binary characters using Microsoft Excel software. The data were analysed using the programs GenAlEx and POPGENE. Thirty two DNA fragments were amplified, and a polymorphism of 81.25% of these fragments was detected. The polymorphic information content of the markers ranged from 0.46 to 0.49. This study examines the genetic diversity of artificial and natural populations of *M. mandacaia*. The data found in this work may help meliponiculturists with information for better management of artificial populations of Mandaçaia and, consequently, help in the conservation of this species.

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increase in local inbreeding. This allows for a decrease in local genetic diversity and makes them less resistant to environmental changes[8].

The genetic-molecular marker has been a good tool for monitoring and conserving genetic resources in wild species and those of economic interest[9]. These markers provide important data for population genetic studies, such as estimates of the degree of genetic diversity, gene flow, differentiation within and between populations and degree of inbreeding[10,11].

Considering the ecological and economic importance of Mandaçaia, molecular-genetic studies in rational breeding populations may help monitor the genetic diversity of these populations. Our hypothesis is that *M. mandacaia* maintained in rational breeding populations have less genetic diversity than natural populations.

Hence, the present work aimed to analyse the diversity and genetic structure of natural populations of *M. mandacaia* and those maintained for rational breeding in Petrolina-PE, Brazil.