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Maternal ancestry of honey bees on São Miguel-Azores (Portugal)

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Abstract:

The *Apis mellifera iberiensis* was introduced to the Azores in the 16th century by Portuguese settlers likely from the northern part of mainland Portugal. Many years later, in the 1980s, occurred a new introduction using honey bee subspecies from C-lineage maternal ancestry. This left a C-lineage signature in the Azores, with some islands, such as Pico or Graciosa, showing high frequency of C-lineage maternal ancestry as revealed by the study conducted in 2014/2015 (Ferreira et al. 2020). Hence, this study aimed to evaluate the C-lineage maternal signature on São Miguel, seven years later (samples collected in 2023). A total of 192 colonies were sampled across the island and the total DNA was extracted from a pool of fifteen right front legs, were removed and placed in a 2.0-mL screwcap tube containing two zirconia beads of 2 mm diameter. The DNA extracts were then amplified using PCR targeting the tRNA^{Leu}-cox2 region of the mitochondrial DNA, followed by Sanger sequencing. The results show a prevalence of 64% for lineage A, contrasted with the 70% recorded in 2014/2015. Additionally, lineage C had a prevalence of 20%, compared to 27% in 2014/2015. In the A-lineage, the most prevalent haplotype was A14, while in the C-lineage, it was the C2 haplotype. Consequently, it can be inferred even almost 45 years after the C-lineage ancestry introduction, there are still a considerable frequency of this foreign maternal origin.

Keywords: *Apis mellifera*, genetic diversity, maternal lineage, mtDNA.

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