

ABSTRACT

Chika Aureli Rasyil. 24020121120018. **Reidentification of Ebony (*Diospyros celebica* Bakh.) Bogor Botanical Garden Collection Based on Morphological, Phenetics, and Multilocus DNA Barcoding Approaches.** Under the guidance of Lilih Khotimperwati and Irvan Fadli Wanda.

Ebony (*Diospyros celebica*) is a plant from the Ebenaceae family known for its high-quality ebony wood. *Diospyros celebica* from the Bogor Botanical Gardens collection originating from Sulawesi, Kalimantan, and Maluku has morphological differences that need to be reviewed. This study aimed to examine the similarities and differences in morphological characteristics, analyze the results of phenetic, identify, and analyze the results of phylogenetic of *D. celebica* from the Bogor Botanical Gardens collection. The study of morphological variation began by characterizing 53 characters of vegetative organs, then analyzed the similarities and differences. Phenetics analysis was done by processing morphological characterization data using MVSP software with the UPGMA program and PCA analysis. Phylogenetic analysis began with DNA extraction, DNA amplification using *trnL-F*, *matK*, and *trnH-psbA* markers, electrophoresis, and sequencing. The sequences were processed using MEGA XI software. The sequences were aligned using the ClustalW program, then BLAST-ed to see the homology in NCBI. Phylogenetic tree reconstruction used the Maximum-Likelihood method with the Tamura 3-Parameter model. The results of morphological characterization show that 6 characters differentiate the *D. celebica* of the Sulawesi region from other regions, 5 characters that differentiate the *D. celebica* of the Kalimantan region from other regions, and 5 characters that differentiate the *D. celebica* of the Maluku region from other regions. The results of phenetic analysis formed a phenogram tree and PCA scatter plot which showed two clusters. Cluster I consists of *D. celebica* Sulawesi region, while cluster II consists of *D. celebica* Maluku and Kalimantan regions. The phylogenetic results showed three clades. Clade A consists of *D. celebica* Sulawesi region, clade B consists of *D. celebica* Maluku and clade C consist of Kalimantan regions. This research succeeded in showing that the *D. celebica* region of Kalimantan and Maluku is a different species from the *D. celebica* region of Sulawesi.

Keywords: *Diospyros celebica*, phenetic, phylogenetic, barcoding, multilocus