

ABSTRACT

Wiwiting Dyah Putri Pradnya Paramita. 24020121140209. Phenetic Analysis and Genetic Variation of Malapari (Pongamia pinnata) Provenance of Ujung Kulon National Park in KHDTK Wonogiri Based on Morphological Markers and RAPD. Under the supervision of Lilih Khotimperwati and Maryatul Qiptiyah.

Malapari (Pongamia pinnata (L.) Pierre) is a potential biofuel-producing plant capable of growing on marginal land. It has been cultivated in KHDTK Wonogiri as a prospective source of renewable energy. This study employed two markers, namely morphological and molecular. Observation of morphological characters used a sample of 48 parent trees by observing 34 vegetative characters of malapari stems and leaves. Molecular analysis was carried out using the RAPD (Random Amplified Polymorphic DNA) technique using 96 samples and tested on several random primers to amplify genomic DNA. The primers that passed the screening stage and produced polymorphic bands were OPC 15, OPAH 15, OPL 11, OPAN 01, and OPAO 01. Morphological and molecular data were then analyzed using the UPGMA method to construct dendrograms and PCA to support visualization of clustering. The morphological analysis revealed two major clusters with a similarity index value of >82%, indicating that all samples belong to the same species, although phenotypic variation was observed in stems and leaves. The RAPD analysis also divided the population into three large clusters, with similarity index values <70%, indicating that the malapari tree has high genetic diversity. Integrating the two analyses revealed an inverse correlation, meaning that although there are individuals that are morphologically similar, they differ genetically. The malapari population in KHDTK Wonogiri is relatively homogeneous but contains important genetic variation that should be considered in conservation and breeding programs. Morphological analysis is useful for preliminary identification, while RAPD molecular analysis provides a more accurate picture of genetic relationships.

Keywords: *genetic variation, KHDTK Wonogiri, morphology, phenetic analysis, Pongamia pinnata, RAPD.*

Approved

Supervisor I

Supervisor II

Dr. Lilih Khotimperwati, S.Si., M.Si.
NIP. 196903301994032001

Dr. Maryatul Qiptiyah, S.Si., M.Sc.
NIP. 197801232001122001