

**KERAGAMAN GENETIK *SHOREA LEPROSULA* MIQ.  
POPULASI KALIMANTAN  
PADA LIMA PERTANAMAN KONSERVASI *EX SITU*  
BERDASARKAN ANALISIS ISOZIM**

**Oleh:**

**Tri Maria Hasnah<sup>1</sup>  
Mohammad Na'iem<sup>2</sup>  
Sukirno Dwiasmoro Prianto<sup>3</sup>**

**INTISARI**

*Shorea leprosula* Miq. merupakan salah satu jenis kayu dari famili Dipterocarpaceae yang mempunyai nilai ekonomi tinggi. Kerusakan populasi hutan alam karena *illegal logging* dan konversi lahan hutan diduga telah mengurangi keragaman genetik dan mempersempit basis genetik jenis tersebut. Sebagai penanda genetik molekuler, isozim dapat digunakan untuk menduga tingkat keragaman genetik. Pengetahuan mengenai keragaman genetik akan memberikan peranan yang penting dalam program pemuliaan dan konservasi genetik jenis *S. leprosula* di Indonesia.

Bahan yang digunakan dalam penelitian ini adalah daun muda *S. leprosula* dari populasi Kalimantan pada lima pertanaman konservasi *ex situ* yang terletak di Carita (Banten), Semaras-Pulau Laut (Kalimantan Selatan), Gunung Kencana (Jawa Barat), Batu Ampar (Kalimantan Timur) dan Kotawaringin Timur-SBK (Kalimantan Tengah). Populasi yang digunakan dalam penelitian ini adalah Gunung Bunga (Kalimantan Barat), Kenangan-ITCI (Kalimantan Timur), Melak (Kalimantan Timur), Bengalun (Kalimantan Timur), Labanan (Kalimantan Timur), Meraang (Kalimantan Timur), Sambarata (Kalimantan Timur), Bukit Baka (Kalimantan Tengah). Masing-masing populasi yang dipilih secara acak diwakili oleh 100 individu. Metode yang digunakan dalam analisis isozim ini adalah elektroforesis vertikal gel akrilamid dengan menggunakan empat sistem enzim (6PG, GOT, EST dan SHD).

Empat sistem enzim tersebut dikendalikan oleh lima lokus (*6Pg*, *Got*, *Est-1*, *Est-2* dan *Shd*) dengan 22 alel. Keragaman genetik *S. leprosula* di Kalimantan tergolong tinggi ( $H_T = 0,329$ ) dengan 61,2% keragaman genetik berasal dari keragaman antar populasi. Peningkatan proporsi individu homozigot dijumpai pada hampir semua lokus pada semua populasi *S. leprosula* di Kalimantan ditandai dengan indeks fiksasi yang bernilai positif ( $F_{ix} = 0,312$ ).

**Kata kunci :** isozim, *Shorea leprosula* Miq., keragaman genetik

<sup>1</sup> Mahasiswa Jurusan Budidaya Hutan. Fakultas Kehutanan. Universitas Gadjah Mada.

<sup>2</sup> Staf edukatif Jurusan Budidaya Hutan. Fakultas Kehutanan. Universitas Gadjah Mada.

<sup>3</sup> Staf edukatif Jurusan Budidaya Hutan. Fakultas Kehutanan. Universitas Gadjah Mada.

**THE GENETIC DIVERSITY OF *SHOREA LEPROSULA* MIQ.  
OF KALIMANTAN POPULATIONS  
IN FIVE EX SITU CONSERVATION PLANTATIONS  
ASSESSED BY ISOZYME ANALYSIS**

by:  
**Tri Maria Hasnah<sup>1</sup>**  
**Mohammad Na'iem<sup>2</sup>**  
**Sukirno Dwiasmoro Prianto<sup>3</sup>**

**ABSTRACT**

*Shorea leprosula* Miq. is a high economic valued timber species belonging to Dipterocarpaceae. Disturbances of natural forest populations caused by illegal logging and conversion of forest land have been reducing its genetic diversity and narrowing its genetic bases. As a molecular genetic marker, isozim is very useful to estimate the genetic diversity. The knowledge of the genetic diversity has an important role for tree improvement and genetic conservation of *S. leprosula* in Indonesia.

The material sampled in this research was young leaves of *S. leprosula* from Kalimantan populations in five ex situ conservation plantations located at Carita (Banten), Semaras-Pulau Laut (South Kalimantan), Gunung Kencana ( West Java), Batu Ampar (East Kalimantan), and East Kotawaringin-SBK (Central Kalimantan). The following populations were examined: Gunung Bunga (West Kalimantan) Kenangan-ITCI (East Kalimantan, Melak (East Kalimantan), Bengalun (East Kalimantan), Labanan (East Kalimantan), Meraang (East Kalimantan), Sambarata (East Kalimantan) and Bukit Baka (Central Kalimantan). Each of the populations selected randomly was represented by 100 individuals. *Polyacrylamide* vertical slab gel electrophoresis was carried out using four enzyme systems, namely 6PG, GOT, EST and SHD.

The four enzyme systems were encoded by five loci (*6Pg*, *Got*, *Est-1*, *Est-2* and *Shd*) and 22 alleles. The level of genetic diversity of *S. leprosula* was high ( $H_T = 0,329$ ) with 61,2% of the total genetic diversity partitioned among populations. The positive value of fixation indices ( $F_{is} = 0,312$ ) indicates an excess of homozygous individuals in almost all loci in all populations.

**Keywords:** isozyme, *Shorea leprosula* Miq., genetic diversity

<sup>1</sup> Student of Silviculture Department. Faculty of Forestry. Gadjah Mada University.

<sup>2</sup>Educative staff of Silviculture Department. Faculty of Forestry. Gadjah Mada University.

<sup>3</sup>Educative staff of Silviculture Department. Faculty of Forestry. Gadjah Mada University.