

**Study of Genetic Variation of
Pinus merkusii Jungh. et de Vriese
in Java Island Using Isozyme Analysis Method**

By :
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Abstract

The genetic variation of *P. merkusii* was investigated using seven polymorphic loci from three enzyme systems, namely Esterase (EST), Glutamate oxaloacetate transaminase (GOT), and Shikimate dehydrogenase (ShDH) as marker genes. Four plantation populations, namely *P. merkusii* plantation in Sumedang, Kebasen, and Jember, and *P. merkusii* seed orchard in Jember were chosen for this study.

The analysis of expected heterozygosity (H_e) revealed that genetic variation within seed orchard ($H_e = 0,290$) was bigger than the other three plantations ($H_e = 0,259$). To clarify the inter-population genetic relationship of the four plantations, a cluster analysis was performed for Nei's genetic distances. They were classified into two major groups; the first included three plantations from Sumedang, Kebasen, Jember, and another was made up of seed orchard in Jember. However, in general it can be concluded that *P. merkusii* plantation in Java has a moderate genetic variation.



**Studi Variasi Genetik
Pinus merkusii Jungh. et de Vriese
di Pulau Jawa dengan Metode Analisis Isozim**

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Intisari

Variasi genetik *P. merkusii* diteliti dengan menggunakan tujuh lokus polimorfik dari tiga sistem enzim, yaitu *Esterase* (EST), *Glutamate oxaloacetate transaminase* (GOT), dan *Shikimate dehydrogenase* (ShDH) sebagai penanda genetik. Empat pertanaman, yaitu hutan tanaman *P. merkusii* di Sumedang, Kebasen, dan Jember, serta kebun benih *P. merkusii* di Jember dipilih sebagai bahan penelitian ini.

Analisis terhadap heterozigositas harapan (H_e) menunjukkan variasi genetik di dalam kebun benih ($H_e = 0,290$) lebih besar dibandingkan dengan ketiga hutan tanaman ($H_e = 0,259$). Untuk menjelaskan hubungan genetik di antara semua pertanaman, digunakan analisis kelompok dengan berdasarkan *Nei's genetic distance*. Diperoleh hasil bahwa terdapat dua kelompok utama, kelompok pertama terdiri atas tiga hutan tanaman di Sumedang, Kebasen, dan Jember, sedangkan di pihak lain adalah kebun benih di Jember. Secara umum dapat disimpulkan bahwa pertanaman *P. merkusii* memiliki variasi genetik yang moderat.