

## **SIFAT FISIKA DAN MEKANIKA KAYU *Acacia auriculiformis* PADA TIGA NOMOR FAMILI YANG BERBEDA DI GUNUNGKIDUL, DAERAH ISTIMEWA YOGYAKARTA**

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### **INTISARI**

Penelitian mengenai sifat-sifat kayu *Acacia auriculiformis* hasil program pemuliaan di Indonesia masih terbatas. Penelitian ini bertujuan untuk mengetahui sifat fisika (kadar air, berat jenis, penyusutan dimensi) dan sifat mekanika (keteguhan lengkung statis, keteguhan tekan sejajar dan tegak lurus serat) dari tiga nomor famili yang berbeda (3, 11, dan 12) kayu *A. auriculiformis*, serta mengetahui hubungan antara berat jenis dengan sifat fisika dan mekanika kayu lainnya. Sampel kayu berasal dari pohon berumur 4 tahun dengan intensitas penjarangan 0%. Penelitian ini menggunakan rancangan acak lengkap dengan satu faktor yaitu nomor famili dari tiga ulangan berupa pohon. Pembuatan contoh uji dan pengujian sifat fisika dan mekanika kayu mengacu pada British standard 373 (1957). Hasil penelitian menunjukkan bahwa sifat fisika kayu berbeda nyata antara nomor famili 3, 11, dan 12, kecuali pada kadar air kering udara, penyusutan radial dari kondisi segar sampai kering udara, penyusutan radial, tangensial, dan (T/R) rasio dari kondisi segar sampai kering tanur. Sifat mekanika kayu berbeda nyata antara nomor famili 3, 11, dan 12 pada *modulus of elasticity* (MoE) dan keteguhan tekan sejajar serat. Famili yang memiliki sifat fisika dan mekanika terbaik adalah nomor famili 12. Sementara itu, berat jenis kayu berkorelasi negatif dengan kadar air dan berkorelasi positif dengan keteguhan tekan sejajar serat. Sehingga dapat disimpulkan menunjukkan bahwa keteguhan sejajar serat dapat diduga melalui berat jenis kering udaranya.

**Kata kunci :** *Acacia auriculiformis*, nomor famili, sifat fisika, sifat mekanika

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## PHYSICAL AND MECHANICAL PROPERTIES OF *Acacia auriculiformis* WOOD ON THREE DIFFERENT NUMBER OF FAMILIES PLANTED IN GUNUNGKIDUL, SPECIAL REGION OF YOGYAKARTA

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### ABSTRACT

Study of the result breeding program *Acacia auriculiformis* wood properties is still limited at Indonesia. The purpose of this study is to observe the physical properties (moisture content, density, shrinkage of dimensions) and mechanical properties (static bending, compressive strength parallel to and perpendicular to the fibers) of three different number of families (3, 11, and 12) *A. auriculiformis* wood and also observe the relationship between specific gravity and other physical and mechanical wood properties. The wood samples were collected from 4 years old trees which thinned with intensity of 0%. This study is using a Complete Randomized Design that using one factor which is thinning intensity with three repetitions trees. Physical and mechanical properties samples tests were made and tested in accordance with British standard 373 (1957). The result showed that the physical properties of wood were significantly different between number of family 3, 11, and 12, except for air dry moisture content, radial shrinkage from fresh to air dry conditions, and radial, tangential, ratio T/R shrinkage from fresh to dry conditions of furnace. The mechanical properties of wood, there is a significant difference between number of family 3, 11, and 12 in modulus of elasticity (MoE) and parallel compressive strength of fibers. Family has the best physical and mechanical properties is number of family 12. Meanwhile, specific gravity of wood has a significant negative correlation with moisture content, and for the mechanical properties of wood has a positive significant correlation in parallel compressive strength of fibers. Based on this study parallel compressive strength of fibers can be predicted by its air dry specific gravity.

**Keywords :** *Acacia auriculiformis*, number of families, physical properties, mechanical properties

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