

PENGARUH VARIASI KELAS DIAMETER DAN KEDUDUKAN RADIAL TERHADAP SIFAT FISIKA DAN MEKANIKA KAYU MANGLID (*Manglietia glauca* Bl.) DARI TEMANGGUNG

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INTISARI

Kebun Benih Semai (KBS) Manglid di Temanggung dibangun untuk memperoleh benih unggul. Informasi terkait kayu Manglid (*Manglietia glauca* Bl.) masih terbatas, baik sifat-sifatnya maupun tujuan penggunaannya. Sifat-sifat kayu dapat bervariasi pada perbedaan kelas diameter serta kedudukan radial. Penelitian ini bertujuan untuk mengetahui sifat fisika dan sifat mekanika kayu Manglid (*M. glauca* Bl.) umur 7 tahun di Kebun Benih Semai, Temanggung pada variasi kelas diameter dan kedudukan radial.

Sampel penelitian diperoleh dari 9 pohon manglid berumur 7 tahun yang ditanam di Kebun Benih Semai (KBS) Manglid di Temanggung. Rancangan penelitian yang digunakan berupa rancangan acak lengkap secara faktorial dengan menggunakan dua faktor yaitu variasi kelas diameter (diameter besar, diameter sedang, diameter kecil) dan kedudukan radial (dekat hati, tengah, dekat kulit). Parameter yang digunakan pada pengujian yaitu kadar air, berat jenis, penyusutan, rasio T/R, keteguhan lengkung statis, keteguhan tekan sejajar serat, dan keteguhan belah yang mengacu pada *British Standard* 373: 1957.

Hasil penelitian menunjukkan rerata kadar air basah dan kadar air kering udara berurutan sebesar 85,11% dan 13,42%; kemudian untuk rerata berat jenis pada kondisi basah, kering udara, dan kering tanur berurutan sebesar 0,40; 0,41; dan 0,44. Penyusutan radial, tangensial, dan longitudinal kondisi basah ke kering udara secara berurutan sebesar 1,96%; 3,49%; dan 0,48%; dengan rasio T/R sebesar 2,02%. Penyusutan radial, tangensial, dan longitudinal kondisi basah ke kering tanur secara berurutan sebesar 3,11%; 5,62%; dan 0,42%; dengan rasio T/R sebesar 2,00%. Keteguhan lengkung statis pada batas proporsi, *Modulus of Elasticity* (MoE), dan *Modulus of Rupture* (MoR) secara berurutan adalah 245,86 kg/cm²; 53,09 kg/cm²; dan 516,94 kg/cm². Keteguhan tekan sejajar serat sebesar 255,86 kg/cm². Keteguhan belah sebesar 5,83 kg/cm². Hasil analisis menunjukkan bahwa faktor variasi kelas diameter berpengaruh sangat nyata terhadap berat jenis basah, berat jenis kering udara, berat jenis kering tanur, dan keteguhan belah. Sedangkan faktor kedudukan radial berpengaruh sangat nyata terhadap kadar air basah dan keteguhan lengkung statis. Berdasarkan hasil penelitian ini, kayu Manglid termasuk ke dalam kelas kuat III-IV.

Kata kunci: kayu manglid, variasi kelas diameter, kedudukan radial, sifat fisika, sifat mekanika

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THE EFFECT OF DIAMETER CLASS VARIATIONS AND RADIAL POSITION ON PHYSICAL AND MECHANICAL PROPERTIES OF MANGLID WOOD (*Manglietia glauca* Bl.) FROM TEMANGGUNG

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ABSTRACT

The Manglid Seedling Seed Orchard (SSO) in Temanggung was established to obtain superior seeds. Information related to Manglid wood (*Manglietia glauca* Bl.) are still limited, both in terms of its characteristics and its intended uses. The properties of wood can be vary depending on the differences in diameter class and radial position. This research aims to determine the physical and mechanical properties of 7-year-old Manglid wood (*M. glauca* Bl.) in Seedling Seed Orchard (SSO) at various diameter classes and radial positions.

The sample of this research was obtained from 9 trees of 7-year-old Manglid from Seedling Seed Orchard (SSO) in Temanggung. The research design used is a factorial completely randomized design with two factors: diameter class variation (large diameter, medium diameter, small diameter) and radial position (near pith, middle, near bark). The parameters tested include moisture content, specific gravity, shrinkage, T/R ratio, static bending strength, parallel to grain compression strength, and shear strength referring to British Standard 373: 1957.

The research results indicate that the average of wet moisture content and air-dry moisture content consecutively are 85,11% and 13,42%; The average specific gravity in wet, air-dry, and oven-dry conditions were 0,40, 0,41, and 0,44. Radial, tangential, and longitudinal shrinkage from wet to air-dry conditions were 1,96%, 3,49%, and 0,48% consecutively, with a T/R ratio of 2,02%. Radial, tangential, and longitudinal shrinkage from wet to oven-dry conditions were 3,11%, 5,62%, and 0,42% consecutively, with a T/R ratio of 2,00%. Static bending strength at proportional limit, Modulus of Elasticity (MoE), and Modulus of Rupture (MoR) consecutively are 245,86 kg/cm²; 53,09 kg/cm²; dan 516,94 kg/cm². Parallel to grain compression strength are 255,86 kg/cm². Shear strength is 5,83 kg/cm². The results of the analysis shows that the diameter class variation has a highly significant effects on wet specific gravity, air-dry specific gravity, oven-dry specific gravity, and shear strength. While radial position has highly significant effects on wet moisture content and static bending strength. Based on the results of this research, Manglid wood is categorized on the strength classes III-IV.

Keywords: manglid wood, diameter class variations, radial position, physical properties, mechanical properties

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