

SIFAT FISIKA DAN MEKANIKA KAYU JABON MERAH (*Neolamarckia macrophylla* (Roxb.) Bosser) PADA TIGA FAMILI TERSELEKSI DARI PACITAN, JAWA TIMUR

Amrin Hakim Pane¹, Fanny Hidayati², dan Sri Sunarti²

INTISARI

Jabon merah (*Neolamarckia macrophylla* (Roxb.) Bosser) merupakan spesies cepat tumbuh yang kayunya bernilai ekonomi tinggi, sehingga untuk meningkatkan potensinya perlu dilakukan program pemuliaan pohon. Selama ini program pemuliaan jabon merah masih berfokus pada sifat pertumbuhan dan kurang memperhatikan parameter kualitas kayu. Penelitian ini bertujuan untuk mengevaluasi sifat fisika dan mekanika kayu jabon merah pada tiga famili terseleksi dari kebun benih uji keturunan generasi pertama di Pacitan, Jawa Timur, serta mengkaji korelasi antara berat jenis dengan sifat-sifat kayu lainnya.

Penelitian dilakukan pada pohon berumur 11 tahun pada tiga famili terseleksi. Parameter sifat fisika yang diuji meliputi kadar air, berat jenis, penyusutan dimensi, serta rasio T/R. Sifat mekanika yang diuji meliputi keteguhan lengkung statis (tegangan pada batas proporsi, modulus patah dan modulus elastisitas), keteguhan tekan sejajar dan tegak lurus serat, serta kekerasan kayu. Data dianalisis menggunakan ANOVA dan korelasi Pearson untuk mengetahui pengaruh dan hubungan antar variabel.

Hasil penelitian menunjukkan adanya perbedaan nyata antar famili pada kadar air kering udara, penyusutan tangensial dan keteguhan tekan tegak lurus serat yang diduga dipengaruhi oleh faktor genetik. Famili 58 menunjukkan performa unggul pada beberapa parameter pengujian. Ditemukan pula korelasi positif yang signifikan antara berat jenis kering udara dengan tegangan pada batas proporsi dan keteguhan tekan sejajar serat. Temuan ini menekankan pentingnya memasukkan sifat kualitas kayu dalam kriteria seleksi pemuliaan.

Kata Kunci: Jabon merah, Famili, Sifat fisika, Sifat mekanika

¹ Mahasiswa Fakultas Kehutanan UGM

² Staff Pengajar Fakultas Kehutanan UGM

PHYSICAL AND MECHANICAL PROPERTIES OF RED JABON WOOD
(*Neolamarckia macrophylla* (Roxb.) Bosser) IN THREE SELECTED FAMILY
FROM PACITAN, EAST JAVA

Amrin Hakim Pane¹, Fanny Hidayati², dan Sri Sunarti²

ABSTRACT

*Red Jabon (*Neolamarckia macrophylla* (Roxb.) Bosser) is a fast-growing species with high economic value timber. To enhance its potential, a tree breeding program is necessary. However, breeding programs for red jabon have so far focused primarily on growth traits, with less attention paid to wood quality parameters. This study aims to evaluate the physical and mechanical properties of red jabon wood from three selected families in a first-generation progeny test seed orchard located in Pacitan, East Java, and to examine the correlation between wood density and other wood properties.*

The research was conducted on 11-year-old trees from three selected families. The physical properties assessed included moisture content, wood specific gravity, dimensional shrinkage, and the T/R ratio. The mechanical properties evaluated included static bending strength (fiber stress at proportional limit, modulus of rupture, and modulus of elasticity), compressive strength parallel and perpendicular to the grain, and wood hardness. Data were analyzed using ANOVA and Pearson correlation to determine the effects and relationships among variables.

The results showed significant differences among three family in air-dry moisture content, tangential shrinkage, and compressive strength perpendicular to the grain, which are suspected to be influenced by genetic factors. Family 58 exhibited superior performance in several test parameters. A significant positive correlation was also found between air-dry density and both proportional limit stress and compressive strength parallel to the grain. These findings highlight the importance of including wood quality traits in selection criteria for breeding programs.

Keywords: Red jabon; Family; Physical properties; Mechanical properties

¹ Student of Faculty of Forestry UGM

² Lecturer of Faculty of Forestry UGM