PERBEDAAN SIFAT ANATOMI KAYU TERAS DAN KAYU GUBAL JATI KLON (*Tectona grandis* Lf.) UMUR 20 TAHUN DARI NGAWI, JAWA TIMUR

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INTISARI

Penelitian ini bertujuan untuk mengkaji struktur anatomi kayu jati (*Tectona grandis* Lf.) klon umur 20 tahun yang ditanam di Ngawi, Jawa Timur, dengan fokus pada perbedaan antara zona kayu teras dan kayu gubal serta variasi sepanjang posisi aksial batang. Parameter kuantitatif yang diamati meliputi panjang serat, diameter serat, tebal dinding sel, diameter pembuluh, frekuensi pembuluh, tinggi jari-jari, dan frekuensi jari-jari. Parameter kualitatif seperti pola parenkim aksial, dan keberadaan tilosis juga diamati.

Sampel diambil dari tiga posisi batang (pangkal, tengah, dan ujung) dan dipisahkan berdasarkan zona radial. Pengamatan dilakukan melalui preparasi maserasi dan irisan mikrotom, serta dianalisis menggunakan uji One-Way ANOVA dan T-Test. Hasil menunjukkan bahwa sebagian besar parameter memiliki nilai yang relatif seragam, tetapi terdapat perbedaan signifikan pada frekuensi pembuluh dan frekuensi jari-jari pada kayu teras antar posisi aksial. Selain itu, diameter serat cenderung lebih besar pada kayu gubal, mencerminkan aktivitas fisiologis jaringan tersebut.

Kesimpulan dari penelitian ini adalah bahwa kayu jati klon mengalami perkembangan anatomi yang khas, terutama pada zona kayu teras yang menunjukkan variasi aksial lebih tinggi akibat proses pembentukan *heartwood*. Temuan ini memberikan kontribusi penting dalam pemanfaatan kayu jati klon secara lebih efisien dan spesifik berdasarkan zona dan posisi batang, serta menjadi referensi ilmiah dalam pengembangan industri kehutanan modern.

Kata Kunci: Jati klon, kayu teras, kayu gubal, sifat anatomi, variasi aksial, *Tectona grandis*

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ANATOMICAL DIFFERENCES BETWEEN HEARTWOOD AND SAPWOOD OF 20-YEAR-OLD CLONAL TEAK (*Tectona grandis* Lf.) FROM NGAWI, EAST JAVA

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ABSTRACT

This study investigates the anatomical structure of 20-year-old clonal teak (*Tectona grandis* Lf.) trees cultivated in Ngawi, East Java, with the aim of understanding the differences between heartwood and sapwood zones, as well as their variations along the axial position of the stem. Quantitative parameters examined include fiber length, fiber diameter, cell wall thickness, vessel diameter, vessel frequency, ray height, and ray frequency. Qualitative anatomical features such as axial parenchyma pattern, ray structure, and tylosis presence were also observed.

Samples were collected from the basal, middle, and upper positions of the stem and further separated into heartwood and sapwood regions. Microscopic analysis was conducted through maceration and sectioning techniques, and data were analyzed using One-Way ANOVA and Independent T-Test. Results revealed that while most anatomical traits are relatively uniform, significant differences were observed in vessel frequency and ray frequency within the heartwood across different axial positions. Furthermore, fiber diameter was generally larger in sapwood, indicating its active physiological role.

The study concludes that clonal teak exhibits distinct anatomical development, with the heartwood showing more variability along the stem due to the process of heartwood formation. These findings highlight the importance of anatomical evaluation for optimized utilization in forestry industries, where zone- and position-specific wood properties can guide harvesting and processing strategies.

Keywords: *Clonal teak, heartwood, sapwood, anatomical properties, axial variation, Tectona grandis*

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