

## VARIASI DIMENSI DAN PROPORSI SEL KAYU JABON PUTIH (*Neolamarckia cadamba* Roxb.) PADA KEDUDUKAN RADIAL DARI TIGA FAMILI HASIL PEMULIAAN

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### INTISARI

Kayu memiliki sifat yang berbeda berdasarkan letak pada batang pohon. Pada kedudukan radial, sifat kayu dipengaruhi oleh perbedaan musim dari waktu ke waktu, lingkungan, dan juga pengaruh kayu juvenil pada awal masa pertumbuhan. Penelitian terdahulu melaporkan bahwa panjang, diameter, dan tebal dinding serat memiliki perbedaan nyata antar famili. Sehingga, perlu dilakukan penelitian terhadap pengaruh kedudukan radial dan famili pada dimensi dan proporsi sel kayu jabon putih hasil program pemuliaan kayu untuk mengetahui dimensi dan proporsi sel kayu jabon putih, potensi pemanfaatannya dan menyediakan informasi terkait sifat famili yang dipilih untuk program pemuliaan kayu jabon putih selanjutnya.

Penelitian ini menggunakan rancangan acak lengkap (RAL) dengan dua faktor yaitu kedudukan radial (dekat hati, tengah, dan dekat kulit) dan faktor famili (F1, F2, dan F3) dengan tiga kali ulangan. Parameter yang diamati yaitu dimensi dan proporsi kayu jabon putih dengan standar *International Association of Wood Anatomist* (IAWA) meliputi panjang serat, diameter serat, diameter lumen serat, tebal dinding serat, diameter pembuluh, proporsi pembuluh, proporsi jari-jari, proporsi parenkim, dan proporsi serat.

Hasil pengamatan menunjukkan bahwa kayu jabon putih memiliki lingkaran tumbuh yang jelas, memiliki pori tata baur, pengelompokan pembuluh sebagian tunggal dan ganda radial, memiliki parenkim aksial tipe apotrakeal difus dan sedikit paratrakeal difus. Hasil penelitian menunjukkan bahwa kayu jabon putih memiliki rata-rata panjang serat sebesar  $1,32 \pm 0,20$  mm; diameter serat  $23 \pm 2,71$   $\mu$ m; diameter lumen serat  $17,35 \pm 2,84$   $\mu$ m; tebal dinding serat  $2,68 \pm 0,56$   $\mu$ m; diameter pembuluh  $137,5 \pm 35,4$   $\mu$ m. Selanjutnya nilai rata-rata proporsi pembuluh sebesar  $17,09 \pm 5,33\%$ ; proporsi jari-jari  $9,28 \pm 3,74\%$ ; proporsi parenkim  $2,56 \pm 0,73\%$ ; dan proporsi serat  $70,88 \pm 6,14\%$ . Faktor kedudukan radial memberikan pengaruh nyata terhadap panjang serat, diameter serat, diameter lumen serat, diameter pembuluh, proporsi pembuluh, dan proporsi serat. Faktor famili memberikan pengaruh nyata pada panjang serat saja. Sementara interaksi antara kedua faktor tersebut memberikan pengaruh nyata panjang serat dan proporsi pembuluh.

Kata kunci: *Neolamarckia cadamba* Roxb., proporsi sel, dimensi sel, kedudukan radial, famili.

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## VARIATION IN CELL DIMENSION AND PROPORSION OF WHITE JABON (*Neolamarckia cadamba* Roxb.) WOOD IN THE RADIAL POSITION OF THE THREE FAMILIES OF TREE BREEDING

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### ABSTRACT

Wood has different properties based on its location on the tree trunk. In the radial position, wood properties are influenced by seasonal differences over time, the environment, and also the influence of juvenile wood at the beginning of the growth period. Previous study reported that fiber length, diameter, and cell wall thickness had significant differences between families. Hence, it is necessary to conduct a study on the influence of radial position and family on the dimensions and cell proportions of white jabon wood resulting from wood breeding programs to determine the cell dimension and proportion, its potential use and provide information regarding the characteristics of the family selected for the next white jabon wood breeding program.

This study used a completely randomized design (CRD) with two factors, the radial position factor (near pith, between the pith-bark, and near bark), and the family factor (F1, F2, and F3) with three replications. The observed parameters are dimension and proportion of the jabon putih wood cells according to the standards from International Association of Wood Anatomist (IAWA) including fiber length, fiber diameter, fiber lumen diameter, fiber wall thickness, vessel diameter, vessel proportion, ray proportion, parenchyma proportion, and fiber proportion.

The observation results show that jabon putih wood has distinct growth ring, has diffuse porous vessel, grouping of partially solitary and radial vessel, has diffuse apotracheal and scanty diffuse paratracheal. The study results show that jabon putih wood has an average fiber length of  $1.32 \pm 0.20$  mm; fiber diameter  $23 \pm 2.71$   $\mu$ m; fiber lumen diameter  $17.35 \pm 2.84$   $\mu$ m; fiber wall thickness  $2.68 \pm 0.56$   $\mu$ m; vessel diameter  $137.5 \pm 35.4$   $\mu$ m. Furthermore, the average value of vessel proportion was  $17.09 \pm 5.33\%$ ; ray proportion  $9.28 \pm 3.74\%$ ; parenchyma proportion  $2.56 \pm 0.73\%$ ; and fiber proportion  $70.88 \pm 6.14\%$ . The radial position factor has significant effect on fiber length, fiber diameter, fiber lumen diameter, vessel diameter, vessel proportion, and fiber proportion. Family factor only has significant effect on fiber length. Meanwhile, the interaction between these two factors has a significant effect on fiber length and vessel proportions.

**Keywords:** *Neolamarckia cadamba* Roxb., cell proportions, cell dimensions, radial position, family.

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