

SIFAT PEMESINAN KAYU JABON PUTIH (*Neolamarckia cadamba* (Roxb.) Bosser) DENGAN VARIASI PENAMPANG KAYU YANG DIBERI PERLAKUAN PANAS

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INTISARI

Jabon putih memiliki sebaran tempat tumbuh yang luas dan tingkat ketahanan yang lebih baik terhadap serangan hama dan penyakit, sehingga diharapkan menjadi alternatif pengganti kayu jenis cepat tumbuh lainnya. Namun, jabon putih memiliki sifat inferior, maka perlu upaya peningkatan kualitas kayu dengan modifikasi panas. Pemotongan kayu di Indonesia rata-rata menggunakan metode *lifesawing* yang menghasilkan papan radial dan tangensial, dimana keduanya memiliki sifat kayu yang berbeda, yaitu sifat pemesinan, fisika, dan mekanika. Tujuan penelitian ini untuk mengetahui pengaruh interaksi variasi penampang kayu dan suhu perlakuan panas terhadap sifat pemesinan, fisika, mekanika, dan warna kayu jabon putih.

Pada penelitian ini, digunakan metode rancangan acak lengkap (CRD) dan analisis varian (ANOVA) pada taraf uji 5%, serta uji lanjut HSD *Tukey*. Faktor penelitian yaitu variasi penampang kayu (papan radial dan tangensial) dan suhu perlakuan panas (Kontrol, 90°C, 120°C, dan 150°C) dengan menggunakan oven. Sampel uji diperoleh dari pohon yang berumur 12 tahun yang berasal dari KHDTK Wanagama. Uji sifat pemesinan mengikuti standar ASTM D-1666-64, meliputi pengetaman, penggergajian, pengeboran, pengamplasan, dan pembubutan. Uji sifat fisika dan mekanika, meliputi kadar air, berat jenis dan kekerasan kayu mengikuti British Standard 373-1957, dan uji warna kayu dengan sistem CIELAB.

Interaksi antara kedua faktor berpengaruh nyata terhadap kadar air. Faktor variasi penampang kayu berpengaruh nyata terhadap berat jenis, cacat pengamplasan dan pembubutan. Faktor suhu perlakuan panas berpengaruh nyata terhadap cacat pengetaman, penggergajian, pengamplasan, kadar air, kekerasan, dan perubahan warna. Persentase nilai bebas cacat permukaan uji pengetaman, penggergajian, pengeboran, pengamplasan, dan pembubutan masing-masing sebesar 95,88%, 63,65%, 71,39%, 98,13%, dan 79,24%. Berdasarkan nilai tersebut, maka sifat pemesinan kayu jabon putih termasuk kategori kelas I-II.

Kata kunci : Jabon putih, perlakuan panas, variasi penampang kayu, sifat pemesinan kayu

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MACHINING PROPERTIES OF WOOD SURFACE VARIATIONS OF WHITE JABON WOOD (*Neolamarckia cadamba* (Roxb.) Bosser) TREATED BY HEAT TREATMENT

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ABSTRACT

White jabon has a wide distribution of growing places and a better resistance to pests and diseases, so it is expected to be a decent alternative substitute for other fast-growing wood species. However, white jabon has inferior properties, so it is necessary to improve wood quality, i.e. heat treatment modifications. The common log conversion process in Indonesia uses a live-sawing method, which produces radial and tangential sawn boards, in which possess different wood properties, i.e. machining, physical, and mechanical properties. This study aims to determine the interaction effects of different wood variations and heat treatment on the machining, physical and mechanical properties, and wood colour of white jabon.

In this study, the Completely Randomized Design (CRD) method and Analysis of Variance (ANOVA) at a 5% significance level were used, along with Tukey's HSD post hoc test. Experimental factors were sawnboard variations in wood surface (radial and tangential boards) and the temperature of heat treatment (Control, 90°C, 120°C, and 150°C) using an oven method. Wood specimens were manufactured from 12-year-old trees grown in the KHDTK of Wanagama. The machining properties test followed an ASTM D-1666-64 standard, including planning, sawing, boring, sanding, and turning. The physical and mechanical properties test, including moisture content, specific gravity and hardness based on a British Standard 373-1957, and a colour change test using a CIELAB system.

The interaction between the two factors affected significantly the moisture content. The factor of wood surface variation has significant results on specific gravity and the number of defects on sanding and turning. The heat treatment factor has significant results on the defect rates of planning, sawing, sanding, moisture content, hardness, and colour change. The percentages of defect-free planning, sawing, boring, sanding, and turning test surfaces were 95.88%, 63.65%, 71.39%, 98.13%, and 79.24%, respectively. Based on the defect-free rates, the machining properties of white jabon wood are categorized as class I-II.

Keywords : White jabon, heat treatment, wood surface variations, wood machining properties

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