

**VARIASI SIFAT FISIKA, DIMENSI SERAT, DAN PROPORSI SEL
Acacia decurrens PADA KEDUDUKAN AKSIAL DAN RADIAL
DARI CANGKRINGAN, YOGYAKARTA**

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INTISARI

Pemanfaatan kayu yang belum dikenal dan cepat tumbuh dapat menjadi solusi dalam permasalahan pasokan kayu sebagai kebutuhan industri maupun rumah tangga. *Acacia decurrens* Willd. (endemik Australia) adalah salah satu jenis cepat tumbuh, yang banyak ditemukan di Kecamatan Cangkringan, Yogyakarta setelah erupsi Gunung Merapi. Namun informasi mengenai sifat dasar kayu *A. decurrens* yang tumbuh di daerah tersebut masih terbatas.

Penelitian ini dilakukan untuk mengetahui sifat fisika (kadar air (KA), berat jenis (BJ), dan perubahan dimensi), dimensi serat (panjang serat, diameter sel, diameter lumen, tebal dinding sel), dan proporsi sel (pembuluh, parenkim longitudinal, parenkim jari-jari, serabut) *A. decurrens* dengan dua faktor yaitu kedudukan aksial dan radial. Sifat fisika diuji dengan *British standard 373* (1957). Penelitian menggunakan rancangan acak lengkap dengan tiga ulangan.

Hasil penelitian menunjukkan nilai rerata (\pm standar deviasi) sebagai berikut: KA segar $88,54\% \pm 9,70$; KA kering udara $13,48\% \pm 0,74$; BJ segar $0,60 \pm 0,05$; BJ kering udara $0,63 \pm 0,06$; BJ kering tanur $0,67 \pm 0,06$; penyusutan total tangensial, radial, longitudinal serta nilai T/R berturut-turut sebesar $6,62\% \pm 0,64$; $3,61\% \pm 0,69$; $0,49\% \pm 0,14$; $2,63 \pm 0,36$; panjang serat $0,92 \text{ mm} \pm 0,07$; diameter sel $15,02 \mu\text{m} \pm 0,57$; diameter lumen $9,34 \mu\text{m} \pm 0,59$; tebal dinding sel $2,90 \mu\text{m} \pm 0,27$; serta proporsi sel pembuluh, sel parenkim longitudinal, sel parenkim jari-jari, dan sel serabut secara berturut-turut sebesar $12,20\% \pm 1,18$; $12,34\% \pm 0,78$; $12,67\% \pm 1,33$; $62,80\% \pm 2,57$. Berdasarkan hasil yang diperoleh, kayu *A. decurrens* memiliki potensi utama untuk dimanfaatkan menjadi bahan baku konstruksi.

Kata kunci: *Acacia decurrens*, sifat fisika, dimensi serat, proporsi sel, kedudukan aksial, kedudukan radial

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VARIATION OF PHYSICAL PROPERTIES, FIBER DIMENSIONS, AND CELL PROPORTION IN RADIAL AND AXIAL POSITION OF *Acacia decurrens* FROM CANGKRINGAN, YOGYAKARTA

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ABSTRACT

Utilization of lesser-known and fast-growing wood can be a solution to the problem of wood supplied for industrial and household needs. *Acacia decurrens* Willd. (endemic of Australia) is one of the fast growing species, which is mostly found in Cangkringan District, Yogyakarta after the eruption of Mount Merapi. However, information regarding the basic properties of *A. decurrens* wood is still limited.

This study aimed to identify the physical properties (moisture content (MC), specific gravity (SG), and dimensional changes), fiber dimensions (fiber length, cell diameter, lumen diameter, cell wall thickness), and cell proportions (vessels, longitudinal parenchyma, ray parenchyma, fibers) *A. decurrens* in radial and axial position. Physical properties were tested with British standard 373 (1957). This study used a completely randomized design with three replications.

The results showed the mean values (\pm deviation) as follows: fresh MC was $88.54\% \pm 9.70$; air-dry MC was $13.48\% \pm 0.74$; fresh SG was 0.60 ± 0.05 ; air-dry SG was 0.63 ± 0.06 ; kiln-dry SG was 0.67 ± 0.06 ; the total tangential, radial, longitudinal shrinkage and T/R values were respectively $6.62\% \pm 0.64$; $3.61\% \pm 0.69$; $0.49\% \pm 0.14$; 2.63 ± 0.36 ; fiber length was $0.92 \text{ mm} \pm 0.07$; cell diameter was $15.02 \mu\text{m} \pm 0.57$; lumen diameter was $9.34 \mu\text{m} \pm 0.59$; cell wall thickness was $2.90 \mu\text{m} \pm 0.27$; and the proportions of vessel, longitudinal parenchyma, ray parenchyma, and fiber respectively were $12.20\% \pm 1.18$; $12.34\% \pm 0.78$; $12.67\% \pm 1.33$; $62.80\% \pm 2.57$. Based on the results obtained, *A. decurrens* wood has the main potential to be used as construction raw material.

Keywords: *Acacia decurrens*, physical properties, fiber dimensions, cell proportions, axial position, radial position

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