

VARIASI SIFAT ANATOMI PADA ARAH AKSIAL DAN RADIAL KAYU PULAI DARAT (*Alstonia angustiloba* Miq.) DARI WONOGIRI, JAWA TENGAH

Oleh:

Artisticia Surya Asriningtyas Ratri Anggadewi¹, Widyanto Dwi Nugroho², dan Mashudi³

INTISARI

Alstonia spp. dikenal sebagai kayu perdagangan penting, salah satu jenis diantaranya adalah *Alstonia angustiloba* Miq (pulai darat) yang informasi sifat anatominya masih terbatas dan ciri mikroskopis kayu untuk kegiatan identifikasi kayu belum terdapat di basis data Inside Wood. Kayu pulai darat diambil dari salah satu provenan di plot uji keturunan generasi pertama KHDTK Wonogiri yang dibangun oleh BBPPBPTH. Penelitian ini bertujuan untuk mengetahui ciri mikroskopis kayu pulai darat; variasi dimensi dan proporsi sel pada arah aksial, radial, dan interaksi antara aksial – radial kayu pulai darat guna dapat menentukan proses pengolahan dan peruntukan kayu yang tepat serta membantu kegiatan uji keturunan pulai darat di KHDTK Wonogiri

Ciri mikroskopis kayu pulai darat diamati mengacu pada standar IAWA Committee (1989). Sampel anatomi berupa sampel irisan pada bidang transversal, radial, dan tangensial kayu yang diperoleh dengan mengiris sampel blok kayu menggunakan mikrotom geser; dan sampel maserasi menggunakan metode franklin. Variasi proporsi dan dimensi sel kemudian dianalisis menggunakan *two – way ANOVA*.

Hasil penelitian menunjukkan kayu *A. angustiloba* Miq. memiliki ciri anatomi berdasarkan IAWA (1989) sesuai dengan ciri nomor 1, 5, 10, 13, 22, 30, 42, 47, 62, 65, 68, 72, 76, 86, 94, 97, 103, 107, 115, 132, 136, dan 142. Rerata hasil pengukuran dimensi sel panjang serat 1170,67 μm , diameter serat 27,43 μm , diameter lumen serat 23,97 μm , tebal dinding serat 1,73 μm , diameter pembuluh 113,07 μm , frekuensi pembuluh 11 pembuluh/ mm^2 , frekuensi jari-jari 8 jari – jari/ mm . Hasil pengukuran proporsi sel menunjukkan rerata proporsi serat 70,4 %, proporsi parenkim 8,8 %, proporsi jari-jari 14,65 %, dan proporsi pembuluh 6,15 %. Faktor arah aksial memberikan pengaruh terhadap diameter serat, lumen serat, diameter pembuluh, frekuensi pembuluh, frekuensi jari-jari, proporsi serat, proporsi parenkim, proporsi jari-jari, proporsi pembuluh. Faktor arah radial memberikan pengaruh terhadap diameter pembuluh, frekuensi pembuluh. Faktor arah aksial dan radial tidak memberikan pengaruh terhadap tebal dinding serat. Interaksi arah aksial dan radial memberikan pengaruh terhadap frekuensi pembuluh dan panjang serat.

Kata kunci: *Alstonia angustiloba*, dimensi sel, proporsi sel, aksial, radial

¹ Mahasiswa Fakultas Kehutanan Universitas Gadjah Mada, Yogyakarta

² Staf Pengajar Fakultas Kehutanan Universitas Gadjah Mada, Yogyakarta

³ Peneliti Balai Besar Penelitian dan Pengembangan Bioteknologi dan Pemuliaan Tanaman Hutan, Yogyakarta

VARIATION OF WOOD ANATOMICAL CHARACTERISTICS IN THE AXIAL AND RADIAL DIRECTIONS OF PULAI DARAT (*Alstonia angustiloba* Miq.) FROM WONOGIRI, JAWA TENGAH

by:

Artisticia Surya Asriningtyas Ratri Anggadewi¹, Widyanto Dwi Nugroho², dan Mashudi³

ABSTRACT

Alstonia spp. is known as wood of commercial importance. *Alstonia angustiloba* Miq. (pulai darat) is one of *Alstonia* spp. that the wood anatomical properties limited, and there are none of the microscopic wood characteristics for wood identification in Inside Wood database. The woods of pulai darat that were taken was one of the populations from the first generation provenance trials plot in Kawasan Hutan Dengan Tujuan Khusus (KHDTK) Wonogiri which was build by BBPPBPTH. The research aimed to determine wood anatomical characteristics, variation of dimensions of cells, and proportions of cells based on axial, radial, and interaction between the axial-radial directions of the tree in terms of assisting decided the suitable processing and the utilization of wood as well as could assist the provenance trials in KHDTK Wonogiri.

Wood anatomical characteristics were determined according to IAWA Committee (1989) standard. The anatomical samples were slice samples and maceration samples. The slice samples sliced using the sliding microtome obtained the wood transverse, radial, and tangential sections from small woodblock samples, and the maceration sample used the franklin method. Variation of dimensions and proportions of wood cells were analyzed using two-way ANOVA.

The result showed the anatomical characteristics corresponded to features numbered 2, 5, 10, 13, 22, 30, 42, 47, 62, 65, 68, 72, 76, 86, 94, 97, 103, 107, 115, 132, 136, and 142 according to IAWA. Based on the measurement of the cells dimension fibre length, fibre diameter, fibre lumen diameter, vessel diameter, vessel frequency, ray frequency of the wood of *A. angustiloba* had an average of 1170,67 µm; 27,43 µm; 23,97 µm; 1,73 µm; 113,07 µm; 11 vessels per mm²; 8 rays per mm. The research showed the influence of the axial direction on fibre diameter, fibre lumen diameter, vessel diameter, vessel frequency, ray frequency, the proportion of fibre, proportion of parenchyma, proportion of ray, and proportion of vessel. Meanwhile, the radial direction influenced vessel diameter and vessel frequency. On the other hand, the interaction between the axial and radial direction influenced vessel frequency and fibre length.

Kata kunci: *Alstonia angustiloba*, cell dimensions, cell proportions, axial, radial

¹ Student of Faculty of Forestry Universitas Gadjah Mada, Yogyakarta

² Lecturer of Faculty of Forestry Universitas Gadjah Mada, Yogyakarta

³ Researcher of Balai Besar Penelitian & Pengembangan Bioteknologi dan Pemuliaan Tanaman Hutan, Yogyakarta