VARIASI AKSIAL DAN RADIAL SIFAT FISIKA DAN MEKANIKA KAYU SUREN (*Toona sureni* Merr) YANG TUMBUH DI KECAMATAN GETASAN KABUPATEN SEMARANG

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INTISARI

Terbatasnya hasil kayu dari hutan alam menyebabkan masyarakat memituskan untuk mengambil dari hutan rakyat. Salah satunya adalah suren (*Toona sureni* Merr). Agar pemanfaatan kayu dapat optimal, perlu diketahui sifat fisika dan mekanikanya, yangmana pada penelitian ini berasal dari Desa Manggihan, Kecamatan Getasan, Kabupaten Semarang, Jawa Tengah yang memiliki letak geografis antara 110°.25`-110°.30` BT dan 7°.5`-7°.10'LS.

Penelitian ini menggunakan rancangan acak lengkap dengan dua faktor dan 3 ulangan yaitu letak aksial batang (pangkal, tengah, dan ujung batang bebas cabang) serta letak radial batang (dekat hati, tengah, dan dekat kulit). Pembuatan contoh uji dan pengujiannya mengikuti British Standard Method nomor 373 tahun 1957.

Nilai rerata untuk kadar air segar dan kering udara kayu sebesar 106,15% dan 13,98%. Berat jenis segar, kering udara dan kering tanur kayu sebesar 0,422; 0,465 dan 0,477. Penyusutan longitudinal, tangensial dan radial dari kondisi segar ke kering udara berturut-turut sebesar 0,38%; 5,35%; dan 2,79% serta dari kondisi segar ke kering tanur berturut-turut sebesar 0,50%; 7,45%; dan 3,97%. Pengembangan longitudinal, tangensial dan radial dari kondisi kering tanur ke basah berturut-turut sebesar 0,43%; 6,75% dan 3,61%. Keteguhan lengkung statik sampai BP, MoE dan MoR berturut-turut sebesar 468,07 kg/cm^2; 71,51 (x 10^3 kg/cm^2); dan 652,86 kg/cm^2. Keteguhan tekan sejajar serat BP, MoR dan MoY berturut-turut sebesar 281,76 kg/cm^{2}315,40 kg/cm^2; dan 15,17 (x 10^3 kg/cm^2). Keteguhan tekan tegak lurus serat sebesar 151,82 kg/cm^2. Keteguhan geser sejajar serat 64,65 kg/cm^2; Keteguhan belah 7,00 kg/cm^2; serta Kekerasan kayu arah radial dan tangensial sebesar 260,63 kg/cm^2 dan 292,92 kg/cm^2. Faktor kedudukan aksial berpengaruh sangat nyata terhadap berat jenis segar, keteguhan lengkung statik pada batas maksimum, keteguhan lengkung statik pada modulus elastisitas, dan keteguhan tekan sejajar serat pada batas maksimum dan berpengaruh nyata terhadap,berat jenis kering udara, keteguhan lengkung statik pada batas proporsi dan keteguhan tekan sejajar serta pada batas proporsi. Sedangkan kedudukan radial berpengaruh sangat nyata terhadap berat jenis kering udara, penyusutan dimensi tangensial dari kondisi segar ke kering tanur, dan pengembangan dimensi radial, dan berpengaruh nyata terhadap berat jenis segar, penyusutan dimensi radial dari kondisi segar ke kering udara, pengembangan dimensi tangensial, dan keteguhan belah sejajar serat

Kata kunci : suren, sifat fisika kayu, sifat mekanika kayu, letak aksial, letak radial, longitudinal, tangensial, radial, BP, MoE, MoR

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AXIAL AND RADIAL VARIATION OF THE PHYSICHAL AND MECHANICAL PROPERTIES OF SUREN (*Toona sureni* Merr) WOOD GROWN ON SEMARANG

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ABSTRACT

Shortage of wood produced from natural forest has led people to consider wood grown on the community forest. One of them is Suren (*Toona sureni* Merr) wood which is found quaite a lot on many community forest. In an effort to utilize suren wood efficiently a study on its physical and mechanical properties was therefore conducted by using wood grown on a community forest in Semarang regency which is located on 110°.25'-110°.30' WL and 7°.5'-7°.10'SL.

This study was carried out by using Completely Randomized Design (CRD) of two potition factors that is axial potition (bottom, middle of height, and top of the tree) and radial positions (nearby pith, middle, and nearby bark). All the wood samples used for the measurement were prepared according British Standard of Method BS 373.

Suren wood has an average green and air-dry MC of 106,15 % and 12,98 % respectively. Specific gravity (SG) in green wood, air-dry and oven-dry are 0,432; 0,465 and 0,477. The average longitudinal, tangential and radial shrinkage of the wood from green to air-dry condition are 0,38 %; 5,35 %; and 2,79 % and also from green to oven-dry condition successively are 0,50 %; 7,45 %; and 3,97 %. The average longitudinal, tangential and radial swells of wood from oven-dry to wet condition successively equal to 0,43 %; 6,75 % and 3,61 %. The Static Bending Strength in Proportion Point (PP), MoE and MoR successively equal to 468,07 kg/cm^2; 71,51 (x 10^3 kg/cm^2); and 652,86 kg/cm^2. The compression parallel to grain in Proportion Point (PP), MoR and MoY successively equal to 281,76 kg/cm^2; 315,40 kg/cm^2; and 15,17 (x 10^3 kg/cm^2). The compression perpendicular to grain are 151,82 kg/cm2. The shearing strength value is 64,65 kg/cm^2; The resistance to cleavage value is 7,00 kg/cm^2; and also wood hardness in the radial and tangential side are 260,63 kg/cm^2 and 292,92 kg/cm^2. The actial potition have effect significantly to SG in air-dry, Static Bending Strength in Proportion Point (PP), and compression parallel to grain in Proportion Point (PP), and very significantly to SG in green wood, Static Bending Strength in MoE, compression parallel to grain in MoR. While radial positions have an very significant effect on to SG in air-dry, radial shrinkage of the wood from green to oven-dry, tangential swells and significantly to SG in green wood, radial shrinkage of the wood from green to air-dry, tangential swells of wood from oven-dry to wet, and resistance to cleavage.

Keywords : toona, nature of wood physics, nature of wood mechanics, actial potition , radial position, longitudinal, tangential, radial, PP, MoE, MoR.

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