VARIASI RADIAL SIFAT FISIKA DAN MEKANIKA PADA BERBAGAI UMUR KAYU JATI (*Tectona grandis Linn.f.*) HASIL PENJARANGAN DI KPH RANDUBLATUNG

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INTISARI

Penjarangan merupakan penebangan untuk memperlebar jarak tanam atau mengurangi jumlah pohon agar pertumbuhan tegakan tinggal dalam suatu area lebih merata sehingga mutu kayu yang dihasilkan meningkat. Jati yang dihasilkan dari penjarangan mempunyai kenampakan fisik yang kurang bagus dibandingkan jati pada umumnya antara lain mempunyai diameter yang kecil, terserang penyakit, bentuk batangnya cacat dan tumbuh abnormal. Penelitian mengenai sifat fisika dan mekanika perlu dilakukan untuk memberikan gambaran lebih lengkap tentang kualitas kayu jati penjarangan.

Penelitian ini menggunakan rancangan acak lengkap dengan dua faktor dan tiga ulangan yaitu umur (12, 15, 20, dan 25 tahun) serta letak radial batang (dekat hati dan dekat kulit). pembuatan contoh uji dan pengujiannya mengikuti British Standard Method nomor 373 tahun 1957.

Kayu jati hasil penjarangan di KPH Randublatung mempunyai kecenderungan sifat fisika dan mekanika yang sama. Nilai rerata kadar air dalam kondisi basah dan kering udara kayu sebesar 27,456% dan 17,785%. Berat jenis dalam kondisi basah, kering udara dan kering tanur kayu sebesar 0,553; 0,556 dan 0,614. Penyusutan longitudinal, tangensial, dan radial dari kondisi basah ke kering udara berturut-turut sebesar 0,382%; 2,113% dan 1,172% serta dari kondisi basah kering tanur secara berturut-turut sebesar 0,51%; 4,399% dan 2,368%. Pengembangan longitudinal, tangensial, dan radial dari kondisi kering tanur ke basah berturut-turut sebesar 0,515%; 4,623% dan 2,435%. Keteguhan lengkung statik sampai batas proporsi (BP), modulus elastisitas (MoE), dan modulus patah (MoR) berturut-turut sebesar 458,972 kg/cm^2; 84,318 x 10^3 kg/cm^2 dan 858,198 kg/cm^2. Keteguhan geser sejajar serat 127,841 kg/cm^2; Keteguhan tekan sejajar serat 402,38 kg/cm^2; serta Keteguhan tekan tegak lurus serat 221,605 kg/cm^2. Faktor umur berpengaruh nyata terhadap kadar air kering udara dan berpengaruh sangat nyata terhadap penyusutan radial dari basah ke kering udara. Sedangkan kedudukan radial berpengaruh nyata terhadap penyusutan arah longitudinal dari basah ke kering tanur, keteguhan lengkung statik pada batas proporsi dan keteguhan tekan sejajar serat.

Kata kunci: jati, sifat fisika kayu, sifat mekanika kayu, perbedaan umur, letak radial, batas proporsi, MoE, MoR

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RADIAL VARIATION OF PHSYCAL AND MECHANICAL PROPERTIES OF VARIOUS TREE AGES OF TEAK (*Tectona grandis* Linn.f.) FROM THINNING PROCESS IN KPH RANDUBLATUNG

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ABSTRACT

Thinning is a logging activity to obtain widened tree spacing or reduce the number of trees within an area to make a better growth residual tree stand and to improve the quality of produced timber. Teak tree thinning yields inferior timber which is characterized as small diameter; diseased; non-cylindrical steam also and abnormally growth. Study on the physical and mechanical properties of thinned trees is required to provide information the quality of the wood.

This study was carried out by using completely randomized design (CRD) of two factors i.e. tree ages (12, 15, 20, and 25 year) and radial position (near pith and near bark). In this study the samples were taken from diameter breast height level all the wood samples were prepared according the British Standard BS 373.

The wood from thinned teak trees at KPH Randublatung had similar physical and mechanical properties. Thinned teak wood had average value of the wet and air-dry moisture content (MC) of 27.456% and 17.785% respectively. Specific gravity of the wood in wet wood, air dry and oven-dry condition were 0.553; 0.556 and 0.614. The average value longitudinal, tangential and radial shrinkages of the wood from wet to air-dry condition were 0.382%; 2.113% and 1.172% and that of from wet to oven-dry condition successively were 0.51%; 4.399%; and 2.368%. The average values of longitudinal, tangential, and radial swelling of wood from oven-dry to wet condition successively were 0.515%; 4.623 and 2.435%. The Static Bending Strength at proportional limit, Modulus of Elasticity (MoE) and Modulus of Rupture (MoR) successively were 458.97 kg/cm^2; 84.318 x 10^3 kg/cm^2 and 858 kg/cm^2. The sheare strength value was 127.84 kg/cm^2; the shear strength parallel to grain was 402.38 kg/cm^2; and also shear strength perpendicular to grain was 221.61 kg/cm^2. Tree ages influenced significantly to air-dry moisture content and radial shrinkage of the wood from wet to air-dry condition. The radial position affected to the static bending strength at proportional limit and shear strength parallel to grain of the wood from thinned teak trees.

Keyword: Teak, wood physical properties, wood mechanical properties, radial position, MoE, and MoR

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