PEMODELAN VOLUME BATANG BEBAS CABANG POHON BERDIRI JATI PLUS PERHUTANI ASAL KEBUN BENIH KLON PADA UMUR 6 SAMPAI 15 TAHUN DI KPH MADIUN

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INTISARI

Jati Plus Perhutani asal Kebun Benih Klon (JPP KBK) dikembangkan untuk mendapatkan tanaman yang lebih cepat tumbuh dibandingkan dengan jati konvensional. Penyediaan informasi tentang volume batang bebas cabang diperlukan untuk mengetahui keberhasilan tanaman JPP asal KBK. Tujuan dari penelitian ini adalah untuk memperoleh model penduga volume batang bebas cabang pohon dominan JPP KBK menggunakan model *Lundqvist-Korf*.

Penelitian dilakukan pada petak yang memiliki kelas pertumbuhan baik. Data dikumpulkan dari pengukuran 30 sampel pohon dominan pada petak terpilih. Data yang diambil pada pohon sampel berupa umur, diameter tonggak, diameter setinggi dada, diameter setiap panjang seksi dua meter sampai tinggi bebas cabang, tinggi pohon dan tinggi batang bebas cabang. Volume diprediksi dengan model *Lundqvist-Korf* menggunakan analisis regresi non linier. Kriteria evaluasi model yang digunakan adalah koefisien determinasi dan *standard error of estimate*. Model divalidasi dengan kriteria *root mean square error* (RMSE), *normalized root mean square error* (NRMSE), simpangan agregat (SA), dan simpangan rata-rata (SR).

Persamaan model volume keseluruhan data dengan model *Lundqvist-Korf* adalah $Y = Ae^{-\frac{k}{t^m}}$. Model tersebut sudah signifikan dan koefisien determinasi sebesar 28,9% sehingga masuk dalam kategori sedang. Nilai SA dan SR sudah berada dalam rentang kriteria yang ditentukan, RMSE sebesar 0,08 m^3 dan NRMSE sebesar 0,09. Persamaan model volume dengan model *Lundqvist-Korf* adalah $Volume = 0{,}733 \times e^{\left(-\frac{12{,}979}{Umur^{0{,}933}}\right)}$.

Kata kunci: Jati Klon, Kebun Benih Klon, Pohon Dominan, Volume Batang Bebas Cabang, Model *Lundqvist-Korf*

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MODELING CLEAR BOLE VOLUME OF STANDING PERHUTANI'S TEAK PLUS TREES FROM CLONAL SEED ORCHARDS AGED 6 TO 15 YEARS IN MADIUN FOREST DISTRICT

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ABSTRACT

Perhutani's Teak Plus from Clonal Seeds Orchards was developed to obtained fast growing plant than conventional teak. Provision of information about clear bole volume is important for monitoring and evaluation the success of teak plantation. The research aims to obtain a clear bole volume estimator model of dominant trees of Perhutani's Teak Plus from Clonal Seeds Orchards using Lundqvist-Korf model.

The measurement was conducted on good growth compartments. The collected data were measurement of 30 dominant trees samples in selected plots. Each sample tree was measured and recorded its age, stump diameter, diameter at breast height, diameter of each 2 m sectionwise, diameter at crown based, tree height and clear bole height. Volume was predicted by Lundqvist-Korf model using non-linier regression analysis. The model was evaluated using criteria coefficient of determination and standard error of the estimate. Model was validated using criteria root mean square error (RMSE), aggregate deviation (SA), and mean deviation (SR) criteria.

Model of volume for overall data by Lundqvist-Korf model was expressed as $Y = Ae^{\left(-\frac{k}{t^m}\right)}$. The model was significant and the coefficient of determination was 28.9% thus it was classified as medium category. The value of SA and SR were within the range of specified criteria, RMSE was 0.08 m^3 and NRMSE was 0.09. Model of volume by Lundqvist-Korf model was expressed as $Volume = 0.733 \times e^{\left(-\frac{12.979}{Age^{0.933}}\right)}$.

Keywords: Clonal Teak, Clonal Seeds Orchards, Dominant Tree, Clear Bole Volume, Lundqvist-Korf Model

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