

**PENDUGAAN VOLUME HASIL PENJARANGAN JATI PLUS
PERHUTANI STEK PUCUK PER SORTIMEN DI RPH SIDOLAJU,
BKPH KEDUNGGALAR, KPH NGAWI**

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Abstrak

Kegiatan inventarisasi hutan selalu berhubungan dengan pendugaan volume pohon untuk mengetahui potensi tegakan hutan. Penyusunan penduga volume pohon sangat dibutuhkan untuk pembagian batang hasil penjarangan yang dibagi dalam Kayu Bulat Kecil (KBK), Kayu Bulat Sedang (KBS), dan Kayu Bulat Besar (KBB). Tujuan dari penelitian untuk menyusun model penduga volume kayu Jati Plus Perhutani (JPP) hasil tebang penjarangan yang dirinci berdasarkan proporsi sortimen.

Penelitian dilakukan di Petak 61a, RPH Sidolaju, BKPH Kedunggalan, KPH Ngawi. Penentuan tabel volume lokal disusun berdasarkan volume dan diameter pohon sebagai peubah bebasnya. Data yang dikumpulkan berupa data volume sortimen, volume total pohon, dan keliling pohon setinggi dada. Dari 700 sampel pohon, sebanyak 470 sampel pohon untuk uji model dan 230 sampel pohon untuk data validasi. Penentuan model non linier yang digunakan untuk satu peubah bebas yaitu persamaan *Power* ($V = a D^b$), di mana D adalah diameter setinggi dada, pada kisaran 7-35 cm. Uji model menggunakan r^2 , Uji F, dan Uji t. Sementara untuk uji validasi model digunakan kriteria Simpangan Agregat (SA) dan *Normalized Root Mean Square* (NRMSE).

Hasil penelitian menunjukkan bahwa model volume total dan volume AIII+AII yaitu $V = 0,000114 \times (\text{dbh})^{2,597}$ dan $V = 1,924 \times 10^{-7} \times (\text{dbh})^{4,248}$. Model volume tersebut menghasilkan $r^2 = 0,908$ dan $r^2 = 0,685$, Uji F dan Uji t hasil yang signifikan. Dari perhitungan validasi model total dan volume AIII+AII diperoleh SA = 0,01 dan 2,372 dan NRMSE = 15,63% dan 76,76%. Validasi model volume total masih masuk dalam rentang bagus, sedangkan untuk volume AIII+AII tidak layak digunakan. Selisih volume total dan volume AIII+AII adalah volume AI. Model volume AIII+AII dimodelkan untuk volume AII. Volume AIII tidak dapat dimodelkan karena data tidak mencukupi untuk dilakukan pemodelan. Tabel volume lokal JPP di KPH Ngawi disusun hanya berdasarkan volume total.

Kata kunci: inventarisasi hutan, pendugaan volume, penyusunan tabel volume, sortimen, model Power, validasi model

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**ESTIMATION MODEL OF JATI PLUS PERHUTANI TEAKS'S PER
SORTIMENT THINNING RESULT IN RPH SIDOLAJU,
BKPH KEDUNGGALAR, KPH NGAWI**

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Abstract

Forest inventory always associated with assessment of tree volume estimation to determine the potential of forest stands. Preparation of tree volume estimation is needed for planning timber thinning results, divided into small-diameter roundwood (KBK), medium-diameter roundwood (KBS), and large-diameter roundwood (KBB). This research aimed to develop volume estimation model for Jati Plus Perhutani (JPP) intermediate cutting categorized into 3 sortimen AI, AII, and AIII.

This research was conducted in Petak 61a, RPH Sidolaju, BKPH Kedunggalan, KPH Ngawi. Determination of the local volume table is based on volume and diameter of the tree as variable. Data collected for this study were sortimen volume, total tree volume, and tree diameter at breast height. A total of 700 trees sample were measured, 470 trees sample were used for model fitting and 230 trees sample for validation. To determine Power ($V = a D^b$) model parameter non-linear model was used, where D is the diameter at breast height in range 7-35 cm. The evaluation criteria for model fitting were coefficient of determination (r^2), F test and t test. In addition, Aggregate Deviation (SA) and Normalized Root Mean Square (NRMSE) were used for model validation.

The results showed that total volume estimation and AIII+AII volume were $V = 0,000114 \times (\text{dbh})^{2,597}$ and $V = 1,924 \times 10^{-7} \times (\text{dbh})^{4,248}$ with determination coefficient value $r^2 = 0,908$ and $r^2 = 0,685$, F test and t test significant results. The calculation model validation of total volume and AIII+AII volume obtained aggregate deviation (SA) = 0,01 and 2,372 and NRMSE = 15,63% and 76,76%. The value of validation total volume still fall in good range, but the value of AIII+AII were not accepted and unrequired. The differences of total volume and AIII+AII volume is AI volume. Model AIII+AII could be modeled by AII. AIII volume could not be modeled because the data were not sufficient. Therefore, local volume tables JPP in KPH Ngawi could be determined by total volume.

Keywords: forest inventory, volume estimation, table volume prediction, sortimen, Power model, model validation

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