

**KECERMATAN SAMPLING UNTUK ESTIMASI VOLUME DAN KARBON TEGAKAN DI PETAK 5 KHDTK WANAGAMA, KABUPATEN GUNUNG KIDUL, DAERAH ISTIMEWA YOGYAKARTA**

Wanda Setyagus Perkasa<sup>1</sup>, Rohman<sup>2</sup>

**Intisari**

Inventarisasi hutan dilakukan untuk mengetahui estimasi potensi tegakan sebagai dasar menyusun rencana pengelolaan hutan. Kecermatan sampling merupakan salah satu faktor penting dalam kegiatan inventarisasi hutan. Penelitian ini bertujuan untuk mengetahui karakteristik hutan dan kecermatan sampling menggunakan metode *Uniform Systematic Distribution Sampling* (USDS) serta mengestimasi potensi tegakan dan karbon tegakan di petak 5 KHDTK Wanagama.

Penelitian ini dilakukan dengan pengukuran diameter dan tinggi pohon serta pengamatan karakteristik hutan menggunakan petak ukur lingkaran berukuran 0,1 ha dengan intensitas sampling 10%. Karakteristik hutan di petak 5 KHDTK Wanagama digambarkan melalui keragaman jenis, luas lahan, pola tanam, dan keragaman struktur tegakan. Kecermatan sampling dihitung dengan membandingkan standar error terhadap rata-rata volume pada tingkat kepercayaan 95%. Potensi volume dihitung dan diestimasi kandungan karbon hutan dengan perhitungan biomassa menggunakan persamaan BEF (*Biomass Expansion Factor*).

Hasil penelitian menunjukkan bahwa petak 5 KHDTK Wanagama memiliki komposisi jenis tumbuhan yang beragam, luas lahan didominasi oleh jenis Gamal sebesar 41 ha dan sisanya berupa tegakan lain, pola tanam campuran (polikultur), dan struktur tegakan didominasi kelas diameter 20 – 30 cm. Inventarisasi menggunakan metode *Uniform Systematic Distribution Sampling* (USDS) menghasilkan kecermatan sampling sebesar 16,49%. Estimasi potensi volume tegakan dengan luas kawasan petak 5 sebesar 85,1 ha adalah 11.370,35 – 15.859,76 m<sup>3</sup>. Estimasi kandungan rerata karbon tegakan sebesar 359,33 – 490,91 ton/ha dan rerata serapan CO<sup>2</sup> sebesar 1318,74 – 1801,64 ton/ha.

Kata kunci: Kecermatan Sampling, Inventarisasi, *Uniform Systematic Distribution Sampling*, Karbon Hutan

---

<sup>1</sup>Mahasiswa Fakultas Kehutanan UGM

<sup>2</sup>Dosen Fakultas Kehutanan UGM

**THE SAMPLING PRECISION FOR ESTIMATION OF VOLUME AND  
CARBON STANDS AT PLOT 5 KHDTK WANAGAMA,  
GUNUNG KIDUL REGENCY,  
SPECIAL REGION OF YOGYAKARTA**

Wanda Setyagus Perkasa<sup>1</sup>, Rohman<sup>2</sup>

**Abstract**

The forest inventory aims to determine the estimation of forest stand potency as a fundamental step for forest management plans. Precision is one of the necessary factors in forest inventory activities. This study aims to determine the characteristics of the forest and the precision of sampling using the Uniform Systematic Distribution Sampling (USDS) method, as well as to estimate the forest's stand potential and carbon at plot 5 KHDTK Wanagama.

The data collection was carried out by measuring the diameter and height of trees and observing forest characteristics using a circular plot sized 0.1 ha with 10% intensity of the sample. The forest characteristics of plot 5 KHDTK Wanagama were described by the diversity of species, land area, cropping patterns, and diversity of stand structures. The precision of the sample was calculated by comparing the standard error to the volume average at a 95% confidence level. The volume potential was calculated and estimated for forest carbon content by calculating the biomass using the BEF (Biomass Expansion Factor) equation.

The results showed that plot 5 KHDTK Wanagama has a diverse composition of plant species, the 41 ha of land area is dominated by Gamal species while the rest is of the area is in the form of other stands, mixed planting patterns (polycultures), and the stand structures were dominated by diameter class 20 – 30 cm. Inventory using the Uniform Systematic Distribution Sampling (USDS) method produces sampling precision of 16.49%. The estimated stand volume potential using plot 5 area of 85.1 ha is 11,370.35 – 15,859.76 m<sup>3</sup>. The average estimated carbon content of the stands is 359.33 – 490.91 ton/ha and average CO<sub>2</sub> absorption is 1318.74 – 1801.64 ton/ha.

Keywords: Sampling Precision, Inventore, Uniform Systematic Distribution Sampling, Forest Carbon

---

<sup>1</sup>Student of Faculty of Forestry UGM

<sup>2</sup>Lecturer of Faculty of Forestry UGM