Kandungan C-Organik Tanah pada Tegakan Jati Klon Kelas Umur I dan II di KHDTK Wanagama I, Kabupaten Gunungkidul

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INTISARI

Meningkatnya gas rumah kaca merupakan permasalahan utama yang menyebabkan perubahan iklim. Peningkatan gas rumah kaca disebabkan oleh naiknya konsentrasi gas-gas yang terdapat pada atmosfer, salah satunya yaitu karbon dioksida (CO_2). Pembangunan hutan tanaman merupakan salah satu alternatif untuk membuat serapan karbon yang besar. Salah satu contoh pembangunan yang berhasil di Indonesia yaitu KHDTK Wanagama I. Di KHDTK Wanagama I terdapat tegakan jati klon yang ditanam menggunakan tegakan termuliakan dan ditanam secara luas (Perhutanan Klon Jati). Secara umum penyimpanan utama karbon terdapat dalam biomassanya, bahan organik mati, tanah dan yang tersimpan dalam produk kayu. Penelitian ini dilakukan untuk mengetahui kandungan C-Organik tanah pada tegakan jati klon kelas umur I dan II di KHDTK Wanagama I.

Pengumpulan data sampel tanah dilakukan pada dua tegakan di KHDTK Wanagama I, yaitu tegakan berumur 5 tahun (KU I) yang berada di petak 17 dan tegakan jati klon berumur 18 tahun (KU II) yang berada di petak 13. Sampel tanah terdiri dari tanah terusik dan tidak terusik. Pengukuran data kadar C-Organik tanah dilakukan dengan metode *walkley and black* dan pengukuran akumulasi C-Organik tanah dilakukan dengan mengukur berat volume tanah dan berat C. Analisis data dilakukan menggunakan analisis ragam (*Analysis of Variance*/ANOVA). Apabila jenis tegakan dan lapisan tanah berpengaruh nyata maka dilanjutkan dengan uji lanjutan *Duncan's Multiple Range Test* (DMRT) pada taraf uji 5%.

Hasil penelitian menunjukan nilai kandungan akumulasi C-Organik tanah I pada Tegakan jati klon KU I sebesar 1,767% dan pada Tegakan jati klon KU II sebesar 1,434%. Nilai Berat Volume tanah pada Tegakan jati klon KU I sebesar 1,154 g/cm3 dan pada Tegakan jati klon KU II sebesar 1,007 g/cm3. Nilai akumulasi kandungan C-Organik tanah pada Tegakan jati klon KU I 20,356 ton/ha dan pada Tegakan jati klon KU II 14,350 ton/ha. Akumualasi kandungan C-Organik tanah menurun seiring dengan bertambahnya umur tegakan jati klon serta kedalaman tanah diduga karena produksi biomassa seresah yang lebih tinggi pada tegakan jati klon KU I dibanding pada tegakan jati klon KU II.

Kata Kunci: C-Organik Tanah, Perubahan Iklim, KHDK Wanagama I, Tegakan Jati Klon.

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Soil Organic C-Content in I and II Age Class Clonal Teak Stands in KHDTK Wanagama I, Gunungkidul Regency

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ABSTRACK

The increasing greenhouse gas emissions are the main issue causing climate change. The increase in greenhouse gases is due to the rising concentrations of gases in the atmosphere, one of which is carbon dioxide (CO2). Forest plantation development is one of the alternative methods to create significant carbon sequestration. One successful example of such development in Indonesia is KHDTK Wanagama I. Within KHDTK Wanagama I, there are teak clone plantations established using improved stand techniques and planted extensively (Teak Clone Forestry). The growth of teak stands over time can increase biomass. Generally, the primary carbon storage is found in the biomass, dead organic matter, soil, and stored within wood products. This research aims to determine the C-Organic content in the soil of teak clone forestry in age classes I and II at KHDTK Wanagama I.

Soil sample data collection was conducted in two stands at KHDTK Wanagama I: a 5-year-old stand (KU I) located in plot 17 and an 18-year-old teak clone stand (KU II) located in plot 13. Each stand had 18 soil samples, comprising disturbed and undisturbed soils. The measurement of soil C-Organic content was conducted using the Walkley and Black method, while the measurement of soil C-Organic accumulation was done by measuring soil volume weight and carbon weight. Data analysis was carried out using Analysis of Variance (ANOVA). If the type of stand and soil layer had a significant impact, the analysis continued with Duncan's Multiple Range Test (DMRT) at a 5% significance level.

The results of the research showed that the accumulation of C-Organic content in Clonal Teak Stands KU I was 1.767%, and in Clonal Teak Stands KU II, it was 1.434%. The soil bulk density values in Clonal Teak Stands KU I and KU II were 1.154 g/cm³ and 1.007 g/cm³, respectively. The accumulation values of C-Organic content in Clonal Teak Stands KU I and KU II were 20.356 tons/ha and 14.350 tons/ha, respectively. The accumulation values of C-Organic content decreases with the age of the teak tree clones and soil depth, presumably due to higher litter biomass production in Clonal Teak Stands KU I compared Clonal Teak Stands KU II.

Keywords: Soil C-Organic, Climate Change, KHDK Wanagama I, Clonal Teak Stands.

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