PENDUGAAN STATUS FLUKS KARBONDIOKSIDA DAN METANA PADA TANAH TEGAKAN JATI UNGGUL DI KHDTK WANAGAMA 1

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INTISARI

Fluks karbon pada hutan terjadi melalui sejumlah proses alami meliputi fotosintesis, respirasi, dan dekomposisi. Informasi mengenai fluks gas karbondioksida (CO_2) dan metana (CH_4) di tegakan jati unggul KHDTK Wanagama 1 masih terbatas. Penelitian ini bertujuan untuk mengkaji estimasi fluks CO_2 dan CH_4 serta hubungannya dengan faktor lingkungan mikro di tegakan jati unggul pada musim penghujan.

Penelitian dilakukan di petak 13 tegakan jati unggul KHDTK Wanagama 1 pada bulan Februari. Penentuan lokasi menggunakan metode *purposive sampling* dan pengukuran fluks menggunakan Portable Chamber System Liangber-02P (LI-7810 Li-Cor) metode *chamber* tertutup dengan tiga plot dan tiga waktu pengukuran yakni pada pagi 07.00 – 09.00, siang 11.00 – 13.00, dan sore 15.00 – 17.00 selama tiga hari. Pengukuran fluks CO_2 dan CH_4, suhu, dan kelembaban tanah dilakukan bersamaan pada 15 titik setiap plot sedangkan pengukuran berat volume dan C-organik dilakukan secara sampling pada 5 titik setiap plot.

Hasil penelitian menunjukkan bahwa estimasi fluks CO_2 dan CH_4 di tegakan jati unggul secara berturut-turut yaitu 435,44 – 827,16 $mgCO_2\ m^{-2}\ h^{-1}$ dan -4,95 – -10,66 $\mu gCH_4\ m^{-2}\ h^{-1}$. Fluks CO_2 pada tegakan jati unggul Wanagama 1 pada musim penghujan dipengaruhi oleh C-organik, akumulasi C-organik, dan berat volume tanah sedangkan fluks CH_4 dipengaruhi oleh kelembaban tanah dan berat volume tanah.

Kata Kunci: Fluks CO_2, Fluks CH_4, Jati Unggul, Variasi Temporal dan Spasial

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CARBON DIOXIDE AND METHANE FLUXES ESTIMATION STATUS OF SOIL CLONAL TEAK STANDS IN KHDTK WANAGAMA 1

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ABSTRACT

Forest carbon flux is conducted through several natural processes, including photosynthesis, respiration, and decomposition. Information on carbon dioxide (CO_2) and methane (CH_4) gas fluxes in Wanagama 1 clonal teak stand is limited. This study aims to examine the estimation of CO_2 and CH_4 fluxes and their relationship with microclimate factors in clonal teak stands during rainy season.

This study was conducted in compartment 13th clonal teak stands of KHDTK Wanagama 1 in February. The location was determined using purposive sampling method and flux measurements were taken using the Liangber-02P Portable Chamber System (LI-7810 Li-Cor) closed chamber method with three plots and three measurement period at 07.00 – 09.00, 11.00 – 13.00, and 15.00 – 17.00 over three days. Flux measurement, soil temperature, and soil moisture were taken simultaneously 15 points each plot, while bulk density and soil organic carbon measurements were taken by sampling at 5 points in each plot.

The results showed CO_2 flux in clonal teak stand was estimated to be 435,44 – 827,16 mgCO_2 m^{-2} h^{-1} and CH_4 flux was estimated to be -4,95 – -10,66 μgCH_4 m^{-2} h^{-1}, respectively. CO_2 flux during the rainy season was influenced by organic C-content, C-organik accumulation, and soil bulk density, while CH_4 flux was influenced by soil moisture and soil bulk density.

Keywords: *CO_2 flux, CH_4 flux, Clonal Teak, Temporal and Spasial Variation*

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