

KANDUNGAN C-ORGANIK DAN N-TOTAL TANAH PADA TEGAKAN *Eucalyptus* Hibrida (*E. pellita* x *E. urophylla*) BERDASARKAN PERFORMA TEGAKANNYA DI KHDTK WANAGAMA

Aura Wahyu Riana¹, Daryono Prehaten², Handojo Hadi Nurjanto²

INTISARI

KHDTK Wanagama merupakan kawasan rehabilitasi lahan kritis di Indonesia yang ditanami berbagai jenis vegetasi, salah satunya *Eucalyptus* hibrida (*E. pellita* x *E. urophylla*). Keberadaan vegetasi berperan dalam proses pembentukan tanah dan peningkatan kesuburan, yang dapat dicerminkan melalui kandungan C-organik dan N-total tanah sebagai unsur hara makro. Kandungan C-organik dan N-total tanah dipengaruhi oleh jenis tanaman, umur tegakan, dan kondisi tanah yang tercermin dalam performa tegakan. Penelitian ini bertujuan untuk mengetahui kandungan serta akumulasi C-organik dan N-total tanah pada tegakan *Eucalyptus* hibrida berdasarkan performa tegakannya di Petak 18 KHDTK Wanagama.

Penelitian diawali dengan survei menyeluruh pada tegakan *Eucalyptus* hibrida, dilanjutkan dengan pembuatan 9 petak ukur (PU) berbentuk lingkaran seluas 0,1 ha secara *purposive sampling*. Seluruh PU diklasifikasikan ke dalam tiga kategori performa tegakan, yaitu baik, sedang, dan kurang. Pengambilan sampel tanah dilakukan pada setiap PU pada tiga kedalaman, yaitu 0–10 cm, 10–20 cm, dan 20–30 cm. Sampel tanah dianalisis untuk mengetahui kandungan C-organik menggunakan metode Walkley-Black dan N-total menggunakan metode Kjeldahl, serta dilakukan perhitungan akumulasi stok C dan N tanah.

Hasil penelitian menunjukkan bahwa kandungan C-organik tanah pada tegakan berperforma baik, sedang, dan kurang masing-masing sebesar 2,03%; 2,26%; dan 2,46% yang tergolong kategori sedang, dengan akumulasi masing-masing sebesar 65,57; 72,40; dan 76,38 ton/ha. Sementara itu, kandungan N-total tanah pada tegakan berperforma baik, sedang, dan kurang masing-masing sebesar 0,14%; 0,16%; dan 0,19% yang tergolong kategori rendah, dengan akumulasi masing-masing sebesar 4,42; 5,03; dan 5,77 ton/ha. Kandungan serta akumulasi C-organik dan N-total tanah pada tegakan berperforma baik cenderung lebih rendah dibandingkan tegakan berperforma sedang dan kurang berkaitan dengan biomassa seresah dan tumbuhan bawah, kelimpahan makrofauna tanah, serta serapan unsur hara oleh tanaman.

Kata Kunci: *Eucalyptus* Hibrida, C-organik, N-total

¹ Mahasiswa Departemen Silvikultur, Fakultas Kehutanan, Universitas Gadjah Mada

² Dosen Departemen Silvikultur, Fakultas Kehutanan, Universitas Gadjah Mada

SOIL ORGANIC C AND TOTAL N OF *Eucalyptus* Hibrida (*E. pellita* x *E. urophylla*) BASED ON THE PERFORMANCE OF THE PRESSURE IN KHDTK WANAGAMA

Aura Wahyu Riana¹, Daryono Prehaten², Handojo Hadi Nurjanto²

ABSTRACT

KHDTK Wanagama is a critical land rehabilitation area in Indonesia planted with various types of vegetation, one of which is hybrid *Eucalyptus* (*E. pellita* x *E. urophylla*). Vegetation plays an important role in soil formation processes and fertility improvement, which can be reflected in soil organic carbon (SOC) and total nitrogen (total N) as essential macronutrients. SOC and total N contents are influenced by plant species, stand age, and soil conditions, which are reflected in stand performance. This study aimed to determine the content and accumulation of SOC and total N under hybrid *Eucalyptus* stands based on stand performance in Petak 18 KHDTK Wanagama.

The study was initiated with comprehensive survey of the hybrid *Eucalyptus* stands, followed by the creation of nine circular sample plots with an area of 0.1 ha using purposive sampling. All plots were classified into three stand performance categories, as good, moderate, and poor. Soil samples were taken from each plot at three depths, i.e., 0–10 cm, 10–20 cm, and 20–30 cm. Soil samples were analyzed to determine SOC content using the Walkley-Black method and total N using the Kjeldahl method, followed by calculations of C and N stock accumulation.

The results showed that SOC contents in the good, moderate, and poor stand performance were 2.03%, 2.26%, and 2.46%, respectively, which were classified as medium, with accumulations of 65.57, 72.40, and 76.38 t/ha. Meanwhile, total N contents in the good, moderate, and poor stand performance were 0.14%, 0.16%, and 0.19%, respectively, which were classified as low, with accumulations of 4.42, 5.03, and 5.77 t/ha. The content and accumulation of SOC and total N in good stand performance tended to be lower than in moderate and poor stand performance, which is related to litter and understorey biomass, soil macrofauna abundance, and nutrient uptake by plants.

Keywords: Hybrid *Eucalyptus*, soil organic carbon, total nitrogen

¹ Undergraduated student of Silviculture Departement, Faculty of Forestry, Universitas Gadjah Mada

² Lecturer of Silviculture Departement, Faculty of Forestry, Universitas Gadjah Mada