KARAKTERISTIK FISIKA TANAH PADA TEGAKAN EUCALYPTUS HIBRIDA (*E. pellita* F. Muell × *E. urophylla* S.T. Blake) BERDASARKAN PERFORMA TEGAKAN DI PETAK 18 KHDTK WANAGAMA I

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INTISARI

Kawasan Hutan Dengan Tujuan Khusus (KHDTK) Wanagama I pada awalnya merupakan lahan kritis dengan batuan gamping, dalam rehabilitasinya ditanami jenis vegetasi perintis hingga berkembang dan dapat ditanami jenis *Eucalyptus spp*.. *Eucalyptus* hibrida adalah salah satu tanaman uji persilangan dua spesies (*E. pellita* × *E. urophylla*) yang dikembangkan. Jenis ini dipilih untuk menilai keberhasilan uji hibridasi dan melanjutkan estafet rehabilitasi terutama di petak 18. Jenis tanah vertisol dilokasi ini menjadi penentu sifat fisika tanah (tekstur dan kadar lengas tanah), serta solum yang memengaruhi performa tegakan. Penelitian ini dilakukan untuk mengetahui karakteristik dan korelasi tekstur, kadar lengas, dan solum tanah dengan performa tegakan *Eucalyptus* hibrida (*E. pellita* × *E. urophylla*).

Penelitian diawali dengan membuat Plot Ukur berbentuk lingkaran dengan jari-jari 17,8 m (luas 0,1 ha) sebanyak 9 Plot Ukur secara *purposive*. Pengukuran tinggi dan diameter pohon dilakukan untuk menduga volume dan distratifikasi menjadi performa tegakan baik, sedang, dan kurang. Profil tanah dibuat dan diambil sampel tanah terusik dan tidak terusik pada kedalaman 0-10, 10-20, dan 20-30 cm. Tanah terusik sebagai bahan uji tekstur tanah dengan metode pipet/sedimentasi dan tanah tidak terusik sebagai bahan uji kadar lengas dengan metode gravimetrik di laboratorium. Ketebalan solum tanah diketahui dengan menancapkan pasak besi (panjang 2 m dan diameter 1,2 cm) ke dalam tanah hingga mencapai batuan. Analisis data dengan menggunakan Microsoft Excel 2010.

Hasil penelitian menunjukkan bahwa jenis tekstur tanah di lokasi ini adalah lempung dengan rerata fraksi lempung >70% pada 3 kedalaman di 9 Plot Ukur. Kadar lengas menunjukkan rerata >30% pada 3 kedalaman di 9 Plot Ukur pada saat musim kemarau bulan juni 2023, kadar lengas ini tergolong tinggi sehingga mendukung pertumbuhan tanaman. Tekstur tanah lempung menjadi faktor utama kadar lengas masih tinggi ketika musim kemarau karena daya mengikat dan menahan airnya tinggi oleh pori-pori mikro. Solum tanah terkategori dangkal – sedang (40 – 90 cm). Tekstur tanah dan kadar lengas tidak berbeda signifikan terhadap performa tegakan. Uji lanjut tukey HSD solum menunjukkan terdapat perbedaan signifikan antara performa tegakan baik (64,78 cm) dengan kurang (47,61 cm), artinya semakin dalam solum performa tegakan semakin baik.

Kata Kunci : *Eucalyptus* Hibrida, Sifat Fisika Tanah, Tekstur, Lengas, dan Solum.

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PHYSICAL SOIL CHARACTERISTICS UNDER EUCALYPTUS HYBRID STANDS (*E. pellita* F. Muell × *E. urophylla* S.T. Blake) BASED On STAND PERFORMANCE In PLOT 18 KHDTK WANAGAMA I

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ABSTRACT

The Wanagama Special Purpose Forest Area (KHDTK) was initially critical land with limestone rocks. In its rehabilitation, pioneer vegetation species were planted, which eventually allowed for the planting of *Eucalyptus spp.*. *Eucalyptus* hybrid is one of the crossbreeding trial plants (*E. pellita* × *E. urophylla*) that has been developed. This species was selected to assess the success of hybridization trials and continue the rehabilitation efforts, especially in Block 18. The vertisol soil type in this location is a determining factor for the soil's physical properties (texture and moisture content), as well as the solum, which affects the stand performance. This study was conducted to examine the characteristics and correlation of soil texture, moisture content, and solum depth with the performance of the *Eucalyptus* hybrid (*E. pellita* × *E. urophylla*) stand.

The research began by establishing circular measurement plots with a radius of 17,8 meters (area 0,1 ha), totaling 9 purposively chosen plots. Tree height and diameter were measured to estimate volume and stratified into stand performance categories: good, moderate, and poor. Soil profiles were created, and disturbed and undisturbed soil samples were collected at depths of 0-10, 10-20, and 20-30 cm. Disturbed soil was used for texture testing with the pipette/sedimentation method, while undisturbed soil was used to test moisture content with the gravimetric method in the laboratory. The solum thickness was determined by driving an iron stake (2 meters long and 1,2 cm in diameter) into the soil until it reached bedrock. Data analysis was performed using Microsoft Excel 2010.

The results showed that the soil texture at this site is clay, with an average clay fraction >70% at three depths in the 9 measurement plots. The moisture content showed an average of >30% at three depths in the 9 measurement plots during the dry season in June 2023. This moisture content is relatively high and supports plant growth. The clay soil texture is the primary factor for the high moisture content during the dry season, as it has a high water retention capacity due to its micro-pore structure. The solum depth was categorized as shallow to medium (40 – 90 cm). There was no significant difference in stand performance between soil texture and moisture content. Post-hoc test for solum depth showed significant differences between the good stand performance (64,78 cm) and poor performance (47,61 cm), indicating that deeper solum leads to better stand performance.

Keywords: Hybrid *Eucalyptus*, Soil Physical Properties, Texture, Moisture, and Solum.

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