

PERMEABILITAS PADA LAHAN PERKEBUNAN KELAPA SAWIT DENGAN PENERAPAN LUBANG RESAPAN BIOPORI

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ABSTRACT

According to data from the Central Statistics Agency (BPS) and the Directorate General of Plantations, oil palm is a commodity with significant market potential and demand, and therefore continues to be developed. Land conversion to oil palm plantations can impact soil quality. The physical properties of the soil are disrupted, affecting the transport of air, heat, water, and dissolved substances, or its permeability. Efforts to improve soil permeability include the installation of biopore infiltration holes (LRB) filled with solid oil palm waste. The solid waste used includes mucuna bracteata, empty oil palm bunches, oil palm leaf clippings, and oil palm shell biochar. This research was conducted at the University of Jambi oil palm plantation in Mendalo Village, Jambi Luar Kota District, Muaro Jambi Regency, Jambi Province. The study was conducted from March 2024 to June 2024. A non-experimental descriptive analysis method was used, based on data from research results through an experimental method with eight experimental plots. The treatment consists of a combination application of LRB with 7 treatments of variations of oil palm waste materials filling biopores and 1 treatment without biopores, the treatments to be used consist of, P1 = LRB + Mucuna bracteata, P2 (LRB + Empty oil palm bunches), P3 (LRB + Oil palm leaf clippings), P4 (LRB + Mucuna bracteata + Oil palm shell biochar), P5 (LRB + Empty oil palm bunches + Oil palm shell biochar), P6 (LRB + Oil palm leaf clippings + Oil palm shell biochar), P7 (LRB + Mucuna bracteata + Empty oil palm bunches + Oil palm leaf clippings), P8 (Without biopores). The results of this study indicate that the application of biopore infiltration holes (LRB) with palm oil waste as filler on oil palm plantations resulted in the highest permeability analysis results due to the application of treatment P7 (LRB + Mucuna bracteata + Oil palm empty fruit bunches + Oil palm leaf prunings), namely 18.11 cm/hour. This treatment also obtained the highest results in the analysis of organic carbon, volume weight, and total pore space compared to other treatments.

Keywords : Permeability, Bioretention Cells/System, Solid Waste Palm Oil Mill

INTISARI

Tanaman kelapa sawit berdasarkan data BPS dan Dirjen Perkebunan menjadi komoditas yang memiliki peluang dan kebutuhan pasar yang besar sehingga terus dikembangkan. Konversi lahan menjadi perkebunan sawit dapat mempengaruhi kualitas tanah. Sifat fisik tanah terganggu sehingga berpengaruh terhadap pengangkutan udara, panas, air, dan bahan terlarut dalam tanah atau kemampuan permeabilitas tanah. Upaya yang dapat dilakukan untuk memperbaiki permeabilitas tanah yaitu dengan penerapan lubang resapan biopori (LRB) dengan bahan pengisi limbah padat kelapa sawit. Limbah padat yang digunakan antara lain *mucuna bracteata*, janjang kosong kelapa sawit, pangkasan daun kelapa sawit dan biochar cangkang kelapa sawit. Penelitian ini dilakukan di kebun kelapa sawit Universitas Jambi Desa Mendalo, Kecamatan Jambi Luar Kota, Kabupaten Muaro Jambi, Provinsi Jambi. Penelitian ini dilaksanakan pada dari bulan Maret 2024 hingga bulan Juni 2024. Menggunakan analisis metode deskriptif non eksperimen dengan berdasarkan data dari hasil penelitian melalui metode percobaan dengan 8 plot percobaan. Perlakuan terdiri atas aplikasi kombinasi LRB dengan 7 perlakuan variasi bahan limbah kelapa sawit pengisi biopori dan 1 perlakuan tanpa biopori, perlakuan yang akan digunakan terdiri atas, P1 = LRB + *Mucuna bracteata*, P2 (LRB + Janjang kosong kelapa sawit), P3 (LRB + Pangkasan daun kelapa sawit), P4 (LRB + *Mucuna bracteata* + Biochar cangkang kelapa sawit), P5 (LRB + Janjang kosong kelapa sawit + Biochar cangkang kelapa sawit), P6 (LRB + Pangkasan daun kelapa sawit + Biochar cangkang kelapa sawit), P7 (LRB + *Mucuna bracteata* + Janjang kosong kelapa sawit + Pangkasan daun kelapa sawit), P8 (Tanpa biopori). Hasil penelitian ini menunjukkan bahwa penerapan lubang resapan biopori (LRB) dengan bahan pengisi limbah kelapa sawit pada lahan perkebunan kelapa sawit diperoleh hasil analisis permeabilitas tertinggi akibat penerapan perlakuan P7 (LRB + *Mucuna bracteata* + Janjang kosong kelapa sawit + Pangkasan daun kelapa sawit), yaitu sebesar 18,11 cm/jam. Pemberian perlakuan ini diperoleh juga hasil analisis C-organik, bobot volume, dan total ruang pori tertinggi dibandingkan perlakuan lain.

Kata kunci : Permeabilitas, Lubang Resapan Biopori, Limbah Kelapa Sawit