SIFAT KIMIA TANAH PADA AREA LAHAN TAMBANG MP 21 PT. FREEPORT INDONESIA, MIMIKA, PAPUA TENGAH

Oleh: Anisa Afifah Mustofa
Dibimbing oleh: M. Nurcholis

ABSTRAK

Kegiatan penambangan terbuka dalam jangka panjang berpotensi menurunkan kualitas tanah, baik secara fisika, kimia, maupun biologi. Penelitian ini bertujuan mengevaluasi tingkat kesuburan tanah pada lahan tambang Mile Point (MP) 21 PT. Freeport Indonesia di Kabupaten Mimika, Papua Tengah sebagai dasar upaya rehabilitasi lahan. Penelitian menggunakan metode survei dengan teknik purposive sampling. Sampel tanah diambil dari tiga jenis lahan, yaitu *fresh tailing*, lahan revegetasi dengan tanaman semusim, dan lahan revegetasi dengan tanaman tahunan pada kedalaman 0–20 cm dan 20–40 cm. Parameter yang dianalisis meliputi tekstur tanah, pH, Kapasitas Pertukaran Kation (KPK), C-organik, serta unsur hara makro (N, P_2O_5, K_2O) dan mikro (B, Co, Mo, Zn). Hasil menunjukkan tekstur tanah didominasi pasir, pH 7,36–7,78 (netral–agak alkalis), KPK 9,63–12,61 cmol(+) kg^{-1} (rendah), dan C-organik 0,34–1,18% (sangat rendah–rendah). Kandungan N-total sangat rendah–sedang (0,003–0,39%), P_2O_5 10,80–80,70 ppm (rendah–tinggi), dan K_2O 5,87–8,65 ppm (sangat rendah). Unsur mikro menunjukkan kadar sangat tinggi: B (7,50–23,75 ppm), Co (12,18–17,92 ppm), Mo (3,25–23,53 ppm), dan Zn (169,38–252,0 ppm). Lahan fresh tailing memiliki kesuburan terendah, sedangkan lahan revegetasi terutama dengan tanaman tahunan menunjukkan perbaikan sifat kimia tanah. Hasil ini menegaskan bahwa revegetasi dengan jenis tanaman yang sesuai dapat menjadi strategi efektif dalam meningkatkan kualitas tanah pasca tambang.

Kata Kunci: Kesuburan Tanah, Lahan Tambang, Revegetasi, Unsur Hara.

SOIL CHEMICAL PROPERTIES IN THE MINING LAND AREA MP 21 PT. FREEPORT INDONESIA, MIMIKA, CENTRAL PAPUA

By: Anisa Afifah Mustofa
Supervised: M. Nurcholis

ABSTRACT

Long-term open-pit mining activities have the potential to degrade soil quality, physically, chemically, and biologically. This study aims to evaluate the soil fertility level at the Mile Point (MP) 21 mining area of PT. Freeport Indonesia in Mimika Regency, Central Papua as a basis for land rehabilitation efforts. The study used a survey method with a purposive sampling technique. Soil samples were taken from three types of land: fresh tailings, revegetated land with annual plants, and revegetated land with perennial plants at depths of 0–20 cm and 20–40 cm. Parameters analyzed included soil texture, pH, Cation Exchange Capacity (CEC), organic carbon, and macronutrients (N, P_2O_5, K_2O) and micronutrients (B, Co, Mo, Zn). The results showed that the soil texture was dominated by sand, pH 7.36–7.78 (neutral–slightly alkaline), CEC 9.63–12.61 cmol(+) kg^{-1} (low), and C-organic 0.34–1.18% (very low–low). The total N content was very low–moderate (0.003–0.39%), P_2O_5 10.80–80.70 ppm (low–high), and K_2O 5.87–8.65 ppm (very low). Microelements showed very high levels: B (7.50–23.75 ppm), Co (12.18–17.92 ppm), Mo (3.25–23.53 ppm), and Zn (169.38–252.0 ppm). Fresh tailings land had the lowest fertility, while revegetated land, especially with perennial crops, showed improvements in soil chemical properties. These results confirm that revegetation with appropriate plant species can be an effective strategy in improving post-mining soil quality.

Keywords: Soil Fertility, Mine Sites, Revegetation, Nutrients.